

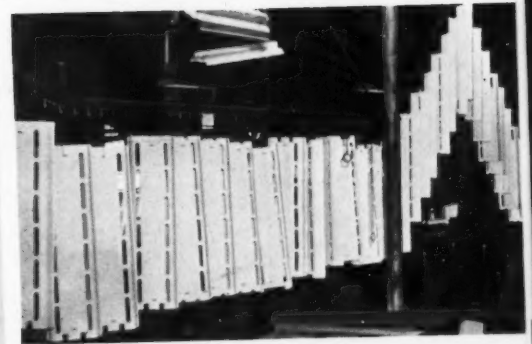
Metal Products Manufacturing

DETROIT PUBLIC LIBRARY
TECHNOLOGY DEPT.
96 PUTNAM AVE.
DETROIT 2, MICHIGAN
JUN 29 1959
DETROIT

LIBRARY
JUN 29 1959
DETROIT

*Serving the
Appliance and
Fabricated Metal Products
Industry*

Waste King Dishwasher-Dryer — Page 26



A Major Break-Through in "Direct-On" Enameling — Page 22



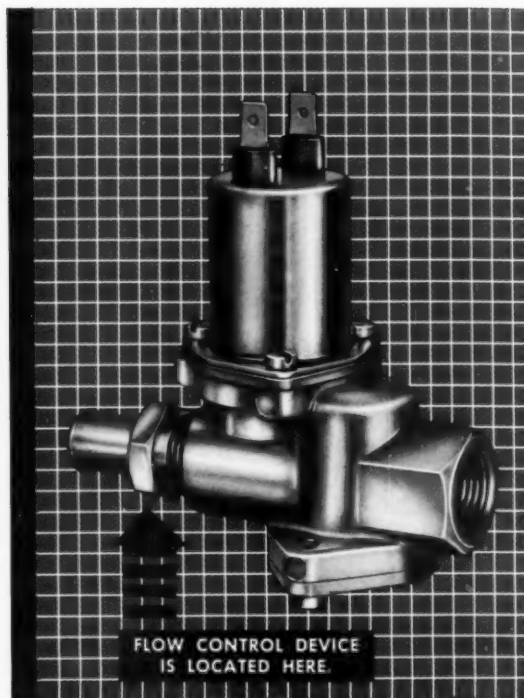
Polishing with Power Brushing — Page 38

If you are controlling

Water Flow

—specify the Detroit S-25 solenoid valve. It gives positive opening and closing from $\frac{1}{4}$ to 6 gpm— $2\frac{1}{2}$ to 200 psi—up to 180°F^* . The valve has an optional flow control device built into the outlet to insure accurate water delivery. It's available with pipe, tubing or hose connections and with a wide variety of terminals. Many different mounting brackets can be obtained. Listed by Underwriters' Laboratories.

*Up to 200° for special applications



FLOW CONTROL DEVICE
IS LOCATED HERE.

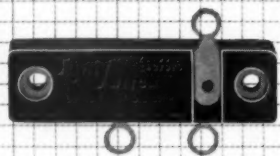


AMERICAN-Standard and Standard® are trademarks of
American Radiator & Standard Sanitary Corporation.

AMERICAN-Standard

DETROIT CONTROLS DIVISION

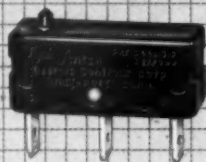
CLASS 1



SHOWN ACTUAL SIZE

LENGTH 1-5/8" — WIDTH 7/16" — DEPTH 11/32"

CLASS 4



SHOWN ACTUAL SIZE

LENGTH 1-3/16" — WIDTH 7/16" — DEPTH 17/32"

If you are controlling

Electric Current Flow

—and want positive action in a small space, look to a Detroit TyniSwitch®. These miniature snap switches give you the long life and precision you need, are virtually bounceless and resist shock and vibration. Class 1 TyniSwitches are top mounted and top actuated and Class 4 all side mounted and top actuated. Both have a wide variety of actuators and terminals. Listed by Underwriters' Laboratories.

There are many applications where these Detroit products can be used as a team—others where they are used alone. Write for Bulletin 275 covering the S-25 solenoid valve and Bulletins 263 and 270 on TyniSwitches. Detroit Controls Division of American Standard, 5900 Trumbull Avenue, Detroit 8, Michigan.

Underwriters' Laboratories listed and
Canadian Standards Assoc. approved.
15 Amp. 125/250 V. A.C. Non-Ind. 1/2 H.P. 125/250 V. A.C.
Contractual approvals for U.S. Gov't applications



New steels are
born at
Armco



Acid-Resisting Porcelain Enamel Finishes **BUILD CUSTOMER-CONFIDENCE**

Acid-resisting porcelain enamel on Armco Enameling Iron makes an ideal finish for clothes washers, dishwashers, range tops, refrigerators . . . any place where household chemicals and food acids might be used or spilled.

The smooth, hard, impervious surface of the porcelain enamel is highly resistant to chemical attack, easy to keep clean and looking like new. Furthermore, it's a finish that's never "out of place," regardless of surrounding decor.

Special Base Metal

Specially-processed Armco Enameling Iron assures excellent

adherence of the porcelain enamel. This base metal has unique enameling characteristics built right into it: Resistance to sag, low carbon content, freedom from gas forming inclusions, and a slightly roughened surface that takes enamel evenly, grips it tightly.

The finish resulting from this combination is sure to build customer-confidence in the products you manufacture. Satisfied users will recommend your products to their friends.

For complete information on Armco Enameling Iron, just write us at Armco Steel Corporation, 1799 Curtis Street, Middletown, Ohio.

ARMCO STEEL



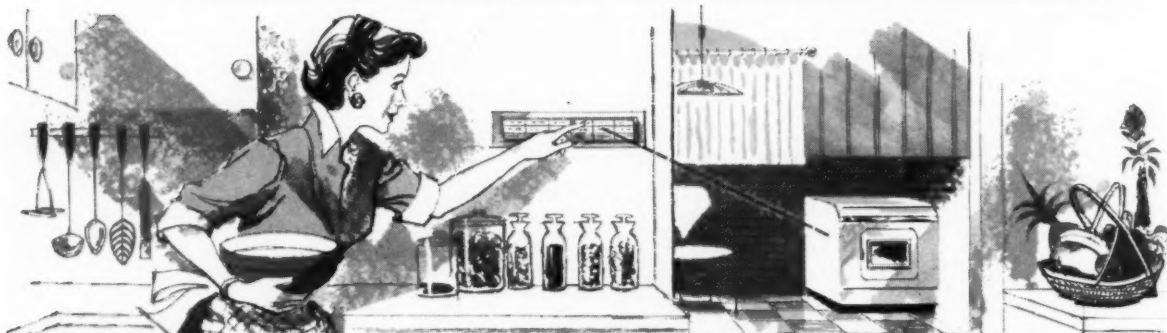
Armco Division • Sheffield Division • The National Supply Company • Armco Drainage & Metal Products, Inc. • The Armco International Corporation • Union Wire Rope Corporation • Southwest Steel Products



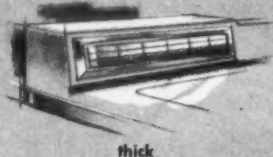
The washer-dryer control system of the future — NOW!

CYCLE-SET® POWER TIMER

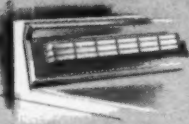
...the only system proved and approved for immediate inclusion in all production plans



ANY CONSOLE STYLING



thick



thin

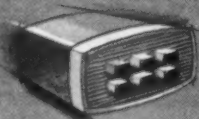


long



short

ANY CYCLE SWITCH ARRANGEMENT



push button



horizontal lever



vertical lever



rotary dial

ANY NUMBER OF CYCLES



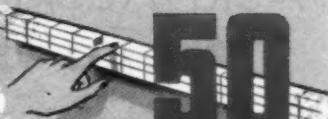
cycles



cycles



cycles



cycles

Introduced some short months ago on top-of-line models of leading manufacturers of laundry appliances, CC's CYCLE-SET® POWER TIMER's use will be expanded for 1960 models. Design flexibility is the secret of such acceptance. Since it is not limited by fixed dimensions of switching panels, the system can match the versatility illustrated above. No other system has been extensively field tested. No other system can be economically tailored to meet your exact design re-

quirements. No other system is so right for your merchandising and marketing needs.

Laundry application is just the opening chapter of the Cycle-Set story. Because of its basic versatility of design and operation, potential uses are virtually unlimited—dish washers among other appliances, vending machines, elevators and industrial process control are just a few of the areas that will benefit from this amazing new timer system. For full facts, write today for informative new bulletin.



Creative Controls for Industry
CONTROLS COMPANY OF AMERICA

9559 Soreng Avenue

• SCHILLER PARK, ILL.

MPM

(including finish)

MONTHLY TRADE PUBLICATION

Established January 1944

Published by

DANA CHASE PUBLICATIONS

York Street at Park Avenue, Elmhurst, Illinois
 Telephone • TErrace 4-5280 • TErrace 4-5281



JULY • 1959

VOL. 16 • NO. 7

FEATURES

Page

- A MAJOR BREAK-THROUGH IN WHITE "DIRECT-ON" PORCELAIN ENAMELING**
 an exclusive plant report following six months of successful operation, using a one-coat process..... 22
- DESIGN FEATURES OF THE WASTE KING DISHWASHER-DRYER**
 an MPM design feature giving details of the washing cycles 26
- 10TH ANNUAL APPLIANCE TECHNICAL CONFERENCE**
 an MPM Staff Report — AIEE sponsored meeting 28
- MAJOR APPLIANCE DIVISION PLANS FOR THE FUTURE**
 an MPM Staff Report — NEMA at Ponte Vedra, Fla. 30
- THE CONVENTION-EXHIBIT OF IAM**
 an MPM Staff Report — 27th annual meeting..... 33
- POLISHING WITH POWER BRUSHING**
 some basic methods used in the polishing of metal 38
- FINISHING FACILITIES BUILT FOR CURRENT AND FUTURE NEEDS**
 describing a new Day-Brite finishing line at Tupelo, Miss. 47
- REDUCED IN TRANSIT DAMAGE WITH REDUCED PACKAGED PRODUCT COST**
 a statement for MPM by Paul W. Bush, Westinghouse Electric Corp., with sidelights on federal specification PPP-P-600 and a statement by Admiral James W. Boundy, USN 80

SHORT FEATURES

- NEW DISHWASHER WETTING AGENT DISPENSER** 21
- AUTOMATIC SHEET FEEDING UNIT** 61

DEPARTMENTS

- EDITOR'S MAIL** 8
- MPM SPOTLIGHT** 9
- FINISH LINE (EDITORIAL)** 16
- NEW LITERATURE** 44
- NEW SUPPLIES AND EQUIPMENT** 50
- INDUSTRY MEETINGS** 58
- PERSONALS** 62
- MPM STATISTICS** 65
- NEWS OF INDUSTRY** 66
- COMING FEATURES** 73
- SAFE TRANSIT NEWS** 78
- ADVERTISING INDEX AND CLASSIFIED** 82

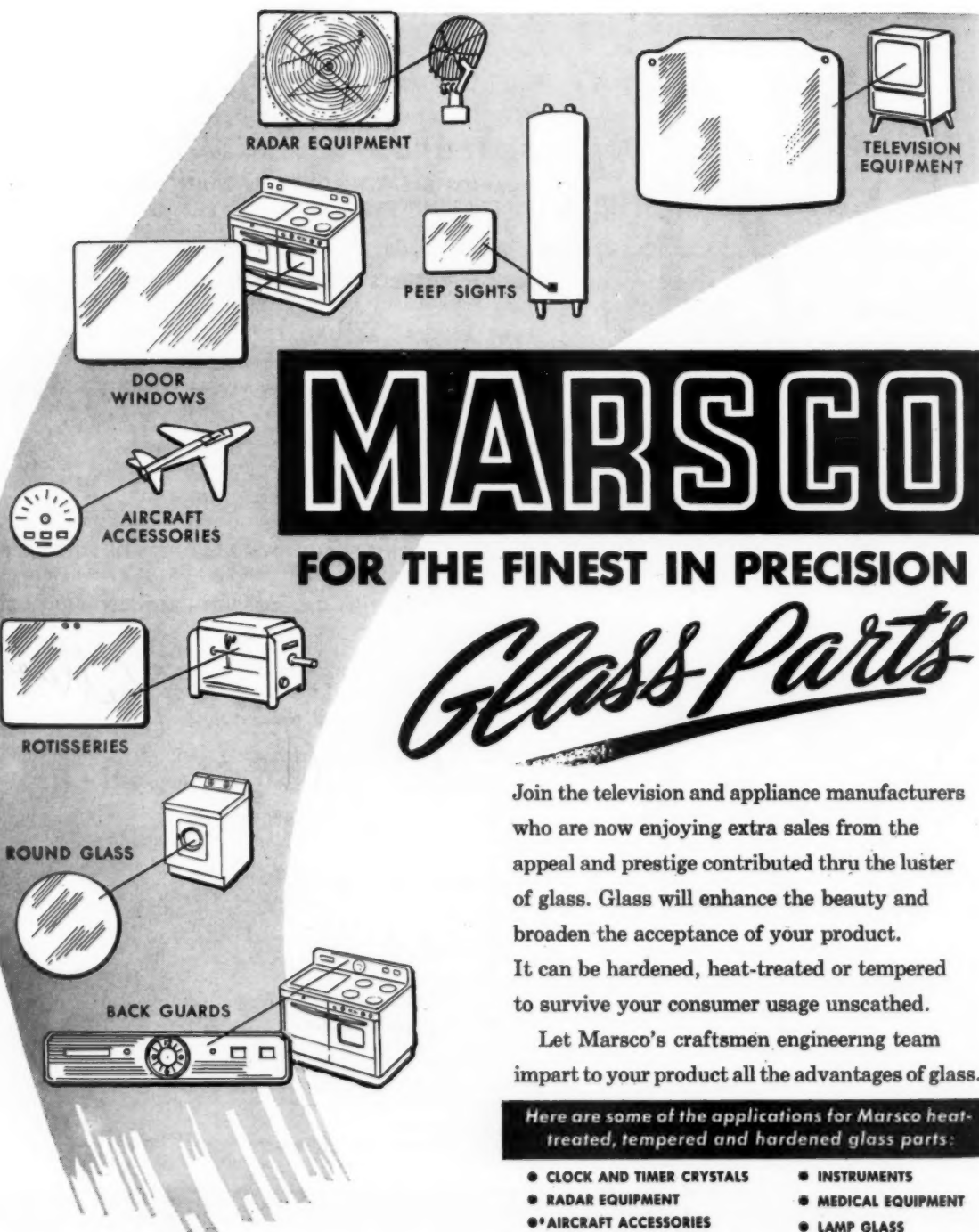
METAL PRODUCTS MANUFACTURING

FROM RAW METAL TO FINISHED PRODUCT

A trade publication devoted to the interests of the metal products manufacturing industry with special editorial attention to home appliances. The editorial scope covers design, engineering, market and statistical information and technical and practical information on plant facilities and all phases of manufacturing "from raw metal to finished product." Free controlled circulation to top management, purchasing, engineering and key plant management and supervision in metal product manufacturing plants. To others, subscription price is \$9.00 per year, domestic. To all other countries \$10.00 per year (U.S. funds). Single copies, \$1.00.

COPYRIGHT © 1959
 DANA CHASE PUBLICATIONS
 PRINTED IN U.S.A.
 Accepted under the act of June 5, 1934
 at Aurora, Illinois
 authorized January 7, 1948.

Editor and Publisher • DANA CHASE
 Associate Editor • WM. N. LARSEN
 Associate Editor • LEONARD ERNST
 Western Editor • GILBERT C. CLOSE
 Publisher's Assistant • DOROTHEA C. MEEKER
 Circulation Manager • KATHRYN BANCROFT
 Mgr. Customer Service • DANA CHASE, JR.
 Customer Service • CAROL KLEPPIN
 Customer Service • R. F. KENDIG



MARSCO

FOR THE FINEST IN PRECISION

Glass Parts

Join the television and appliance manufacturers who are now enjoying extra sales from the appeal and prestige contributed thru the luster of glass. Glass will enhance the beauty and broaden the acceptance of your product. It can be hardened, heat-treated or tempered to survive your consumer usage unscathed.

Let Marsco's craftsmen engineering team impart to your product all the advantages of glass.

Here are some of the applications for Marsco heat-treated, tempered and hardened glass parts:

- CLOCK AND TIMER CRYSTALS
- RADAR EQUIPMENT
- AIRCRAFT ACCESSORIES
- OVEN DOOR WINDOWS for both Conventional and Built-In Ranges
- LIGHT LENSES
- PHOTOGRAPHIC EQUIPMENT
- DIALS AND NAME PLATES
- TELEVISION EQUIPMENT
- INSTRUMENTS
- MEDICAL EQUIPMENT
- LAMP GLASS
- SHELVING
- ROTISSERIES
- WASHING MACHINES
- DRYERS
- PEEP SIGHTS FOR WATER HEATERS

Special Shapes for: Instruments, Gauges, Household and Industrial Appliances.

ask for the man from

Marsco

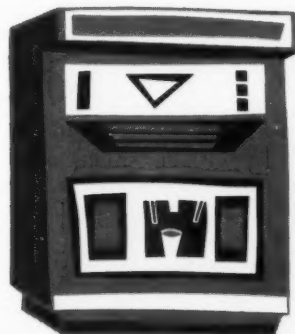
MARSCO MFG. CO., 2901 S. HALSTED ST., CHICAGO 8, ILL.

Looking for a bright idea for your product?

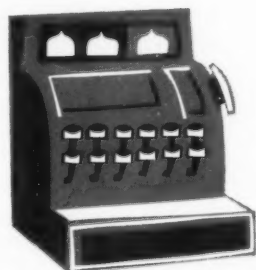


HOME APPLIANCES

LOOK TO BROWN LIPE CHAPIN



VENDING MACHINES



BUSINESS MACHINES



MUSIC & COMMUNICATIONS

An experienced source of decorative and functional die castings and stampings!

Consider Brown-Lipe-Chapin when you're planning ways of adding "hard sell" to your product. Brown-Lipe-Chapin, with extensive facilities for die casting, metal stamping—including steel and aluminum, and electroplating, can help give your product distinctive new eye appeal with a new dimension in durability.

YOU GET A CREATIVE APPROACH

Brown-Lipe-Chapin, experienced in providing the mass-consumer field with quality bright work, takes a creative approach to your design problems. An experienced staff of engineers work out the best and most economical method of producing your parts.

YOU RECEIVE CONSTRUCTIVE ASSISTANCE

You can count on Brown-Lipe-Chapin for constructive suggestions that often add up to savings in time and money. They'll tackle your most difficult part . . . even if it's up to six feet in length. And complete facilities for

die casting, steel or aluminum stamping, anodizing, electroplating and painting are all under one roof.

YOU BENEFIT FROM RELIABILITY BY BROWN-LIPE-CHAPIN

You're assured of reliability with Brown-Lipe-Chapin . . . *reliability* in step-by-step quality control, work performed by craftsmen who are experienced in meeting the rigid specifications of the automotive industry . . . *reliability* in meeting your delivery schedules right on time . . . *reliability* in facilities that can be quickly converted to model change-overs . . . and *reliability* as a continued source of supply. Brown-Lipe-Chapin will guarantee to supply your requirements for die casting and stamping for as long as you may want to specify.

Brown-Lipe-Chapin's two plants, in Syracuse, New York and Elyria, Ohio, combine 25 acres of modern plant facilities that are ready to go to work for you now. So, before the die is cast on your product designs, contact Brown-Lipe-Chapin, Division of General Motors Corporation, Syracuse, New York.



RELIABILITY by BROWN · LIPE · CHAPIN

DIVISION OF GENERAL MOTORS CORPORATION

No matter what you need . i

EQUIPMENT



BALL MILLS



BRUSHES



CIRCULATING DIP TANKS



ENAMEL STORAGE TANKS



FERROFILTERS



FURNACE TOOLS AND FIXTURES



PICKLE BASKETS AND HOISTS



PICKLE TANKS



SPRAY BOOTHS

in PORCELAIN ENAMELING SUPPLIES and

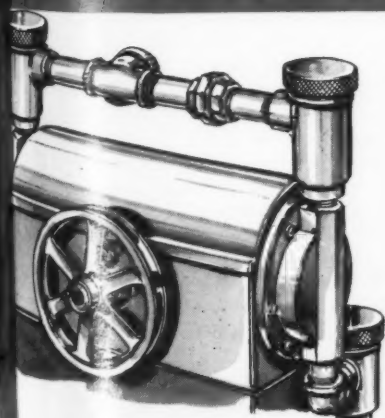
Chicago it can supply it!



TANKS ENAMEL PRESSURE TANKS



JAR MILLS AND JAR MILL RACKS



VITRA-PUMP

- | | | |
|------------------------------|----------------------------------|---------------------------|
| Agitating Storage Tanks | Graduates | Quick Set Chemical |
| Aprons, Rubber | Graining Pastes | Rectifiers |
| Asbestos, Mitts and Supplies | Gravity Buckets | Respirators |
| Ball Mills | Grinding Balls | Ro-tap |
| Balls, Porcelain | Grinding Wheels | Roto-Sprays |
| Block and Tackle | Guns | Rubber Aprons |
| Booths, Spray | Hoists | Rubber Gloves |
| Brick, Mill Lining | Hose | Rubbing Stones |
| Brushes, Bolt Hole | Interval Timers | Scales |
| Brushes, Edging | Jars, Porcelain | Screening Inks |
| Brushes, Hand | Jars, Steel Jacket | Separators, Oil and Water |
| Brushes, Pencil Marking | Laboratory Jar Mills | Separators, Magnetic |
| Brushes, Special | Ladles | Shoe Caulks |
| Brushes, Tube | Magnetic Separators | Sieves, Brass Testing |
| Brushes, Typewriter | Meters, Water | Sieves, Ro-tap |
| Brushes, Wheel | Mill Head Assembly | Spray Booths |
| Burning Tools | Mill Lining Brick | Spray Gun Hose |
| Cement, Mill Lining | Mill Lining Cement | Spray Guns |
| Chemical Glassware | Mill Lining Installation Service | Standard Solutions |
| Chemicals | Mills, Jar | Stencil Paper |
| Circulating Dip Tanks | Mills, Pebble and Ball | Storage Tanks |
| Clay | Mitts, Asbestos | Tank Dolly |
| Clocks | Oil and Water Separators | Tanks, Circulating Dip |
| Color Oxides | Oxides, Color | Tanks, Pickling |
| Combs, Pickling | Paper, Stencil | Tanks, Pressure |
| Crates, Pickling | Patching Compound | Tanks, Storage |
| Dippers | Photovolt Reflection Meter | Testing Sieves |
| Dolly, Tank | Pickling Baskets | Textite Separator |
| Drying Points | Pickling Racks | Thermometers |
| Dusters | Pickling Tanks | Thickness Gauge |
| Filters, Pickle Tanks | Pit-Driers | Timers |
| Frantz FerroFilters | Plugging Compound | Titration Equipment |
| Furnaces | Porcelain Balls | Turntables |
| Furnace Tools | Porcelain Brick | Water Meters |
| Gauge, Thickness | Pressure Tanks | Water Treatment |
| Gloves, Rubber | Quinn-Rogers Vitra Pump | Wire Cloth |
| | | Wool Dusters |

If you do not have
this Catalog
send for it
today!



Chicago Vitreous CORPORATION

A Division of the Eagle-Picher Company
1425 South 55th Court Cicero 50, Illinois

Serving the Needs of the Industry since 1918

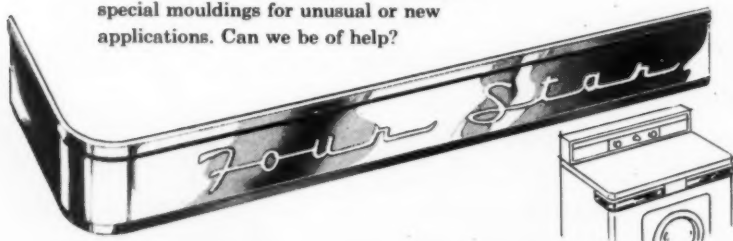


SELLS Faster with PYRAMID TRIM!

In All Major Appliances, eye appeal is buy appeal — and Pyramid Trim adds the sales-clinching touch of luxury that attracts prospects, makes sales!

You owe it to yourself to check PYRAMID's wide variety of standard and special shapes...available at little or no tool cost! You'll find it makes sense in production—adds *dollars* in sales!

SPECIAL NEEDS? Pyramid standard mouldings can be tailored to fit special situations. Or we'll gladly work with you in designing special mouldings for unusual or new applications. Can we be of help?



Pyramid Mouldings Inc.

5365 WEST ARMSTRONG AVE., CHICAGO 46, ILL.
NEW YORK...CALIFORNIA



from the Editor's Mail

Machines of their manufacture

Gentlemen: Please forward two copies of the May issue of METAL PRODUCTS MANUFACTURING.

We are mainly interested in the featured article regarding water heater tank manufacturing at Republic Heater Corporation, Los Angeles, inasmuch as a number of the machines employed and illustrated are of our manufacture. If tear sheets on this article are available, please advise cost for 100 quantity.

Please send invoice to cover the two magazines requested, attention of the writer, and remittance will be forwarded promptly.

R. Bedford, Secretary
Leonard Precision Products Co.
Santa Ana, Calif.

The article referred to by Mr. Bedford is "Water heater tank line features automatic welding," Page 30, May issue, and covers fabrication operations at the Republic-Odin Appliance Corp., Los Angeles.

The Editors

Vending machines of interest

Gentlemen: In the May, 1959 issue of METAL PRODUCTS MANUFACTURING, there was an excellent special section on the Automatic Merchandising Industry. I would greatly appreciate your sending me the addresses of three of the companies mentioned in this special section. These are: The Continental Vending Machine Corp., Schroeder Products Co., Inc., and Vendo-Matic, Inc.

D. B. Abrams, Heaters and Devices Sales
Industrial Heating Dept.
General Electric Co., Shelbyville, Ind.

The addresses of the above firms, in order, are as follows: 956 Brush Hollow Rd., Westbury, Long Island, N. Y.; 325 Montvale Ave., Woburn, Mass.; and 206 W. Elroy St., Minneapolis 8, Minn.

The Editors

An inquiry from "down under"

Gentlemen: I read with great interest Page 41 of METAL PRODUCTS MANUFACTURING, January, 1959.

We are manufacturers of domestic appliances, including gas and electric stoves, and therefore are engaged in an industry which calls for constant model changes. Here, of course, we are faced with the vexing problem of tooling changes, involving high costs and tight time schedules.

So far, we have not been able to find really practical proposals by which we

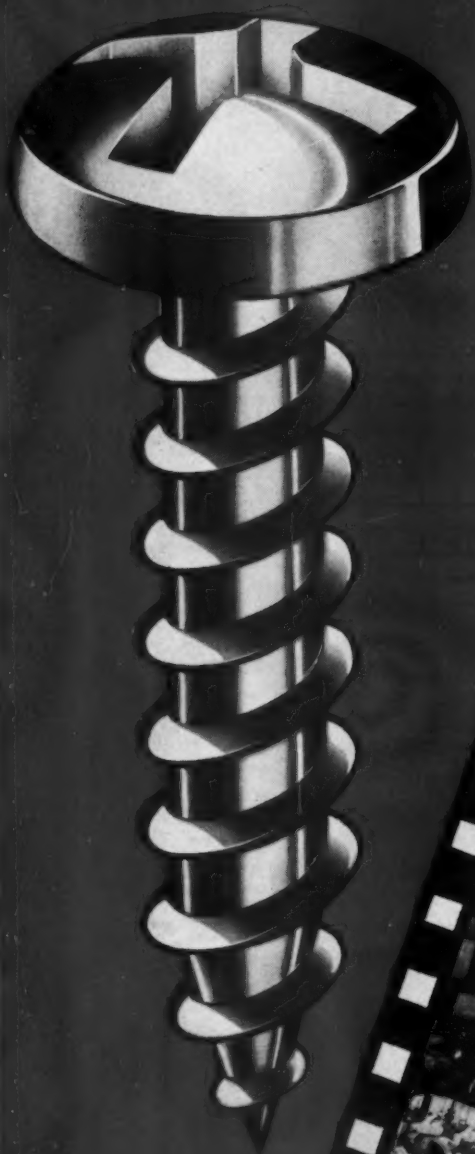
to Page 13 →

THE MPM *spotlight*



The Gold Star award of the American Gas Assn. is prominently featured on the new Caloric 30-inch range shown above. Personalized initials that match the range's chrome trim and stainless steel ventilating hood lend identification to the range. This all-porcelain model has a "keep warm" and a "simmer" setting, as well as 12,000-Btu top burners. Hidden pull-out drip trays make cleaning easy.

this is **UNIVERSAL**
LEADING MANUFACTURER OF SCREWS
FOR THE APPLIANCE INDUSTRY



Steel, Stainless,
Aluminum, Brass

All Heads—All Sizes

SCREWS, BOLTS, NUTS,
WASHERS for Refrigerators,
Ranges, Washers, Driers,
Water Heaters, Freezers,
Dishwashers, Ironers, Toasters,
Air Conditioners, Space Heaters,
Vacuum Cleaners, Food Mixers

Over 8,000 Stock Items

FASTEST SERVICE . . . HIGHEST
QUALITY . . . LOWEST PRICES

Let us quote on your requirements today!
Send for Free Brochure illustrating the screw
industry's most modern manufacturing facilities

UNIVERSAL SCREW COMPANY
MANUFACTURERS

2401 Brummel Place, Evanston, Illinois — DAvis 8-0450, Teletype Evanston Ill 1767
SALES OFFICES IN DETROIT, CLEVELAND, MILWAUKEE
Specialists in Phillips Heads — Member, Screw Research Association

It's 75° cooler inside!

*...which means
better paint adhesion
for less money!*



Only new

TURCOAT

LOW TEMP PHOSPHATING

*gives you up to 200 mg/sq. ft.
of zinc phosphate coating in
2 short minutes at 95° F.*

The Turcoat low temperature phosphating process provides permanent paint adhesion when used at an economical, easy-to-maintain temperature of 95°F. This temperature is lower than that required by other "cold" phosphating processes. It is up to 75° lower than temperatures required by conventional phosphating processes. You save up to 75% in steam, water, electricity and downtime costs alone!

As a base for paint, the Turcoat low temp phosphating process provides a uniformly smooth coating of up to 200 mg/sq. ft. in two minutes at 95°F. As a base for corrosion prevention, it provides an 1100 mg/sq. ft. coating in just eight minutes at 95°F.

Turco has waited to announce low temperature phosphating until it was thoroughly perfected and proven, through exhaustive field testing, to be the very best. For this reason, you'll find that with this new process, just as with Turco's hundreds of other cleaning and chemical processes, you are assured of trouble-free operation, ease of control, and dedicated technical service...anytime, anywhere! Write today for the full story of Turcoat low temperature phosphating, along with Turco's phosphating reference chart. There's no cost...no obligation.

TURCO PRODUCTS, INC.

Chemical Processing Compounds

6135 So. Central Avenue, Los Angeles 1, California

FACTORIES: Newark, Chicago, Houston, Los Angeles, London, Rotterdam, Sydney, Mexico City, Paris, Hamburg, Montreal, Manila, Naha (Okinawa)

Manufactured in Canada by B. W. Deane & Co., Montreal
Offices in all Principal Cities



TURCO PRODUCTS, INC.

6135 So. Central Ave., Los Angeles 1, Calif.

Please send full details on Turco's new low temperature phosphating process and Turco's phosphating reference chart, without cost or obligation.

NAME _____ TITLE (OR DEPT.) _____

FIRM _____

ADDRESS _____

MPM

People ARE BUILDING OUR BUSINESS



Meet the Mr. Quaker States,
they are QSM's Management.
They are building your business
because they have ...

- ✓ Imagination
- ✓ Experience
- ✓ Foresight
- ✓ Stability
- and
- ✓ Faith in the Future!



QUAKER STATE METALS CO. • LANCASTER, PA.

PACE SETTERS IN ALUMINUM

MILL PRODUCERS OF ALUMINUM SHEET • COIL • TUBING • AND BUILDING PRODUCTS

Editor's mail

from Page 8 →

can reduce tooling costs and continue to use orthodox methods.

However, your article on plastics suggests that you can help us and we would certainly appreciate any information you can forward. May we look forward to hearing from you in the near future?

For your interest, we enclose leaflets of some of our latest domestic units which, although quite different from those on your home market, are very popular sellers in Australia, and these pamphlets will give you an idea of the scope we have for plastic tooling.

G. A. Johnson, Works Manager
United Metal Industries Ltd.
Woolloongabba, Brisbane, Australia

The article referred to by Mr. Johnson was "Plastic tools simple to make." The company manufacturing the material featured in this article is Ren Plastics, Inc., 3179 S. Cedar, Lansing 9, Mich. There are other companies, such as Marbelette Corp., Chicago, Ill., and Bakelite Div., Union Carbide Corp., New York City, also engaged in producing similar plastic tooling material.

The Editors

Lift trucks

Gentlemen: Would you please forward any information you can in reference to the four-directional lift truck designed by The Raymond Corp., and listed in the May, 1959 issue of METAL PRODUCTS MANUFACTURING on Page 97.

Please forward all information to 200 Bent St., Cambridge, Mass.

A. F. Leach, Manager of Manufacturing
& Engineering
A. L. Smith Iron Co.
Cambridge, Mass.

The address of The Raymond Corp. is 260-173 Madison Ave., Greene, N. Y.

The Editors

A reader for many years

Gentlemen: During many years of association with the appliance industry, I received and read the monthly trade publications FINISH and METAL PRODUCTS MANUFACTURING. These publications proved quite helpful.

Since my employment on the West Coast, I have not received the issues. It would be greatly appreciated if you could arrange to place my name on your mailing list.

M. M. Platte, Member Technical Staff
Hughes Aircraft Co.
Culver City, Calif.

From an MPM reader

You have one of the best publications in your field. The articles are really worthwhile. My only suggestion, which may be almost impossible to do, is to have your writers include cost figures.

Floyd E. Thelen
Executive Vice President
Luxra Co., Atchison, Kas.

TODAY'S DESIGNER IS GONE!



THE GOOD INDUSTRIAL DESIGNER CAN ONLY BE FOLLOWED TODAY. HE HAS DESIGNED TODAY'S PRODUCT YESTERDAY AND THEN MOVED ON TO TOMORROW.

Perforated metals are part of what he has left us, with the promise of more and better applications through the continued use of this versatile design tool.

We have had a sampling of what can be done—from airplanes to incinerators, designers have incorporated perforated metals into modern products—their ideas have proved themselves—it is now left to the imagination of the creative designer to provide a fuller legacy.

Charles Mundt & Sons are specialists in perforated metal design and production. We have ideas gained through 89 years experience as specialists in the use of Perforated metals. We'd like to share these ideas with you.

Perforating Specialists of All Types of Metals

Write for your free copy of
"Perforated Metals for Every Purpose".



55 FAIRMOUNT AVENUE • JERSEY CITY 4, N. J.





NO. 1 SOURCE OF SUPPLY FOR BURNING TOOLS

Here at Fahrалloy we believe in giving service as well as manufacturing top quality heat and corrosion resisting castings. In fact, service is a keystone upon which our business has grown over almost a quarter of a century. Sitting here at the hub of industry in the heart of America we're never more than a few hours away from you at most. No matter what your problem may be if a heat and corrosion resisting casting is involved, you'll find the solution at Fahrалloy.

Try us and see for yourself.

**RACKS • FIXTURES • BARS • POINTS
TREES • COAT HANGERS • HOOKS**

Fahrалloy serves the nation and the nation's leading industries with heat and corrosion resisting castings.

- AIRCRAFT
- APPLIANCE MANUFACTURERS
- ARMED FORCES
- AUTOMOTIVE
- CHEMICAL
- DRUG
- FARM EQUIPMENT
- FOOD PROCESSING EQUIPMENT
- GENERAL MANUFACTURING
- PUMP MANUFACTURERS
- STEEL



the fahrалloy co.

A Member of the Alloy Casting Institute

150TH AND LEXINGTON AVENUE • HARVEY, ILLINOIS

FOUNDATION *makes
the difference !*

INTERLOX

**assures a sound base
for your finish.**

The Interlox line was developed by Northwest's Cleaning Specialists to give you a better, lower cost, easily controlled phosphate base for organic finishes.

Interlox iron phosphate products deposit a high quality, fine grained, dense coating with great speed and dependability.

There is an Interlox product developed to meet your particular need whether spray or immersion type, single or multiple stage. Interlox baths are unusually long lived and require less additions and control.

Northwest's production-tested chemicals and dependable recommendations will save you money. Your Northwest Cleaning Specialist can give you expert advice on any cleaning or phosphatizing problem.



Licensed Manufacturers

Alert Supply Co. Los Angeles, California Armalite Company, Ltd. Toronto, Canada

NORTHWEST
9310 ROSELAWN



CHEMICAL COMPANY
DETROIT 4, MICHIGAN

THE finish LINE



SERVICE... *Still something to hope for...* as far as the average owner of home appliances and similar fabricated metal products is concerned.

In this and practically all recent issues of MPM, there have been reports of the increased attention being given the question of customer service at the manufacturer level. The general up-grading of service personnel and the laying of more definite plans for field service may all be considered steps in the right direction.

How about the user level?

Regardless of the position of any reader who takes time for this "Finish Line" editorial, it is a safe bet that there has been some service "incident" in his or her home during recent months which might reflect on the manufacturer.

I'll outline a little case history here at MPM which would seem to suit the purpose of this editorial. It has to do with the room air-conditioners which are used to keep the MPM offices comfortable during the summer months.

First of all, I would like to explain that the air-conditioners referred to bear the name of a top manufacturer. They have been in use for almost five years and, in general, have done a very excellent job of keeping the MPM organization comfortable.

It does appear that a brief case history, as outlined by my secretary, might point up the fact that there is still much work to be done at the user level on "service."

From April to June

April 3... Thought it desirable to have our air-conditioners serviced for summer use, so phoned manufacturer to ask recommendations for servicing by someone here in Elmhurst. Was informed that they would send someone from a factory office, as they do not recommend any servicing here in town. Was told we should call again the last part of April or first part of May.

May 4... Phoned again to ask whether the weather was warm enough for servicing. Was informed they would have a service man come out, but that they would phone first to establish a definite appointment.

May 11... Service man came to office. No call was made ahead of time to establish appointment. When asked concerning preventive maintenance, the service man told us that unless a unit is definitely out of order, and won't run, there is nothing to check on. (*Why didn't they tell us that in the*

first place?) The service man did inspect one unit in the editor's office, and we paid for the service call and the service on one unit only.

May 26... Phoned to request service on the air-conditioning unit in the editor's office, as all other units were functioning except this one—the only one that had been inspected.

June 3... Phoned again to check as to probable date service man could come. Service man walked into the office while I was talking with his office. On checking unit, he found fan motor burned out. He ordered one by phone while he was here at our office. He told me it would be installed on June 5 or the 8th, at the latest.

June 8... Received card from service department dated (post mark) June 5, 5:30 P.M., stating that the part required was out of stock, and that a call will be re-scheduled when the part is available. Appointment is to be made to install.

As this case history is being dictated at press time (June 10), we have been enjoying some 90° weather, and your editor can be very thankful that he had stored away, in a convenient closet space, a good, big "Vornadofan" from the days before air-conditioning.

There is work to be done

Let me repeat again that this is certainly not written as a criticism of either the manufacturer, or the equipment which has served so faithfully over a five-year period. It does seem to be a sad commentary, however, that the "message doesn't get through," so that the same story can be told at the service man level as is planned at the factory or distributor level. Then, too, it would seem that a fan motor should be a rather simple component to have readily available at the start of an air-conditioning season.

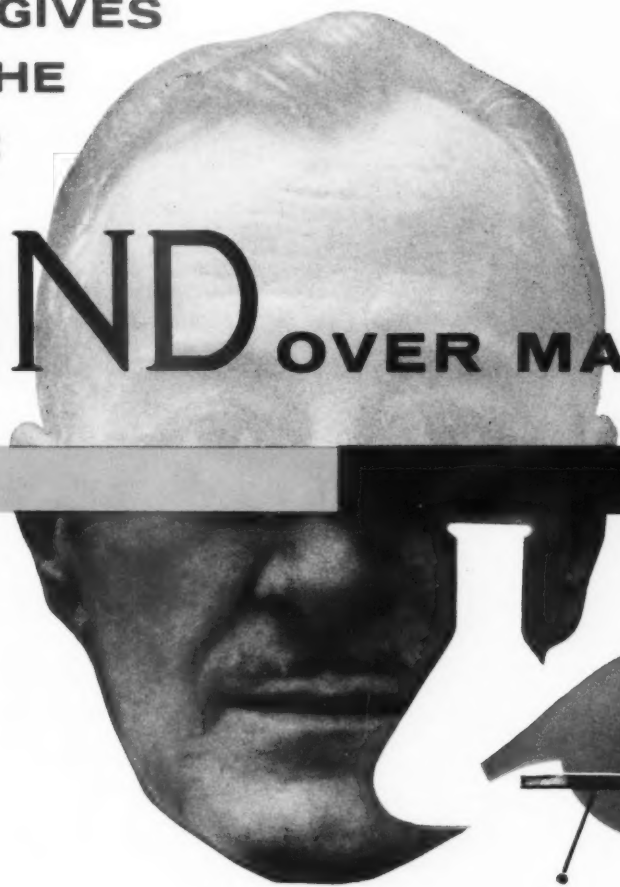
In any event, I am hoping that the editor's office will have air-conditioning return to it before the next "Finish Line" is due for dictation. We can promise you some more good case histories, and they won't all be on window air-conditioners.

Dana Chase

EDITOR AND PUBLISHER

PEMCO GIVES
LIFE TO THE
AXIOM:

MIND OVER MATTER



For fifty years, Pemco minds have been responsible for many advances in ceramic products and processes. These advances—and those yet to come—stem from a thorough knowledge of the behavior of inorganic materials, plus the boldness to change a method or create a new method of application to achieve a planned result.

RESEARCH AND A FLAME

PEMCO



Ceramic frits, inorganic pigments, vitrifiable glass colors

BALTIMORE 24, MARYLAND

WOW! WHAT AN APPETITE!

YOU'VE NEVER SEEN
ANYTHING EAT UP
DIRT, DUST, LITTER
AND LIQUIDS...

As Fast As The
**CHICAGO
VACUUM
CLEANERS!**



MODEL 500-55 TWIN POWER VACUUM

Two 1 1/2 H.P. Motors mounted on a 50 gallon tank. Creates a tremendous volume of air. Picks up large quantities of wet or dry materials at speeds never before possible. Tank is equipped with dump valve for quick emptying!

- ★ ECONOMICAL!
- ★ PORTABLE!
- ★ DEPENDABLE!



MODEL 115 VACUUM CLEANER

Separately mounted 3 H.P. Belt Drive Motor. Designed to conquer the toughest industrial cleaning problems quickly and economically.

**SUPER AIR VELOCITY GIVE CHICAGO CLEANERS THE CAPACITY
TO WORK EFFICIENTLY WITH EXTRA LARGE CLEANING TOOLS!**



Squeegee Nozzle — Picks up water, liquid spillage, scrub water, oil. Leaves floors clean and dry!

HIGH SUCTION POWER removes heavy sludge and waste from sumps.



EXTRA LONG WALL AND CEILING CLEANER! Puts walls, ceilings and overhead pipes within easy reach. Cleans 15 to 20 feet from the floors.

YOU'LL CLEAN IT UP FASTER AND MORE ECONOMICALLY WITH CHICAGO SUPER-POWERED CLEANERS!

Additional Models Also Available
FOR FREE DEMONSTRATION and DETAILS . . . Write to

CHICAGO

AMERICAN CLEANING EQUIPMENT CORP.

1600 S. DEARBORN STREET • CHICAGO 16, ILLINOIS
TELEPHONE: Victory 2-2433



ECONOMY and PRECISION in POWDERED METAL PARTS by NORWALK

QUALITY CONTROL from blueprint to finished machine part. Specified strengths and tolerances are maintained from the first part to the millionth.

ECONOMY. Mass production brings the unit cost down for important savings.

SERVICE. Whether delivery requirements are routine or "emergency," we have the flexibility to meet your schedules.

DESIGN. Our Design Engineers employ powdered metallurgy at its maximum potential: to produce precision parts that do the job . . . with important economies in fabrication.

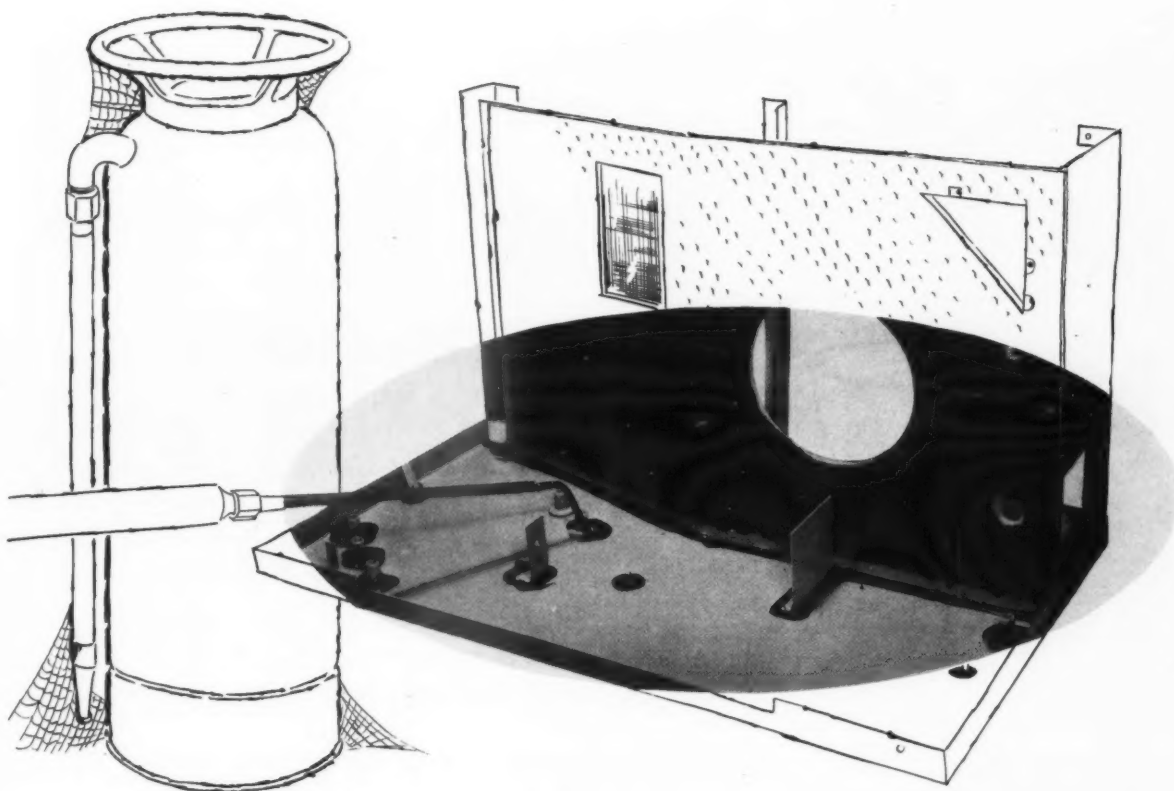
Submit your metal parts problems to us for study and suggestions without obligation.

FREE

Write for information folder, "Converting Powdered Metal into Machine Parts".

NORWALK POWDERED METALS, INC.

8 Muller Park, Norwalk, Conn.



seal with safety . . .

#144.7 Mastic is self-extinguishing!

This fire-safe mastic is an ideal air-conditioning sealer. Because it is self-extinguishing after the solvent has been released, and because it is pumpable, #144.7 is well suited to fast production-line applications. For example:

- Self-extinguishing sound deadener.
- Insulating and protecting bottom pan of room-type air conditioner against corrosion.
- Sealing air-directing partitions.
- Protecting projections, welded studs, annular areas, etc., from corrosion.
- Sealing to keep condensate and air where they belong.
- Holding sound deadening pads in place.
- Miscellaneous applications on dual-purpose air conditioning and heating equipment.

...AND DON'T FORGET THE OTHER #144-SERIES SEALERS

Whatever the sealing characteristic you need, there's probably a #144 Sealer to fill the bill: fast-drying or slow-drying; odorless; capable of retaining "life" under water; break-down resistance to frequent cycling; ability to span seams and gaps without slumping; to take paint baking temperatures without running out of place.

WANT A SAMPLE? Write Dept. R-6, describing your product needs.



3786 CHOUTEAU AVENUE • ST. LOUIS 10, MISSOURI



Sanding time cut 38% with **LOWE** **VINOC**

Another example of the kind of cost-saving ideas you can get from an experienced Lowe Brothers finishing engineer. Here's the story:

"I suggested Lowe Vinoc when the plant superintendent complained about the sanding time required with another product. Now they save 38% in sanding man-hours by spray finishing with Vinoc, and they're well pleased with its appearance. The 38% is their figure."

Let a Lowe Brothers finishing engineer help you find ways to reduce costs. He knows finishes and methods — and he'll gladly make a "flow-chart" analysis of your finishing system if you'll send the coupon. No obligation, of course.

LOWE BROTHERS

INDUSTRIAL FINISHES

QUALITY UNSURPASSED SINCE 1870



Style-tested paints for Home and Industry

REPRESENTATIVES IN: Chicago, Ill.
Boston, Mass. • Jersey City, N. J.
Cleveland, Ohio • Pittsburgh, Pa.
Rochester, N. Y. • Dayton, Ohio
Columbus, Ohio • Milwaukee, Wis.
Indianapolis, Ind. • Cincinnati, Ohio
Detroit, Mich. • Springfield, Mass.
Philadelphia, Pa.



The Lowe Brothers Company
Dayton 2, Ohio

MPM-7

☐ Please have my nearest Lowe Brothers Finishing Engineer call on me as soon as possible.

NAME _____

TITLE _____

FIRM NAME _____

ADDRESS _____

CITY _____ ZONE _____ STATE _____



Unit is designed to meet requirements of all types of applications, including portables.

Dishwasher wetting agent dispenser provides positive metering of liquid

THE PROBLEM of soap-streaked dishes, glasses, and silver has been solved by manufacturers of automatic dishwashers by the incorporation of a wetting agent into the rinse cycle.

The development of a positive dispensing system which would meter out exactly the right amount of liquid wetting agent, cycle after cycle without trouble, then became desirable. Such a dispenser has been designed for all types of home automatic dishwashers.

The producer offers assurance that because of special design, positive metering is absolutely certain, and no priming is required at any time. The new dispenser will fit all existing openings on the present dishwashers manufactured.

It is designed to meet the design requirements of all types of applications, such as the roll-out type, the tilt-door type, and all portables. It is also designed to handle all commercially produced wetting agents that are presently being offered.

The producer expects the unit to be used in all lines and models of dishwashers—not just the deluxe models. No redesign of a meter is necessary to accommodate this dispenser to the dishwasher.

The liquid wetting agent is metered

during the rinse cycle. The metering chamber can be designed with any capacity from 0.5 cc to 1.6 cc. Major components of the unit include a plastic reservoir which holds enough liquid for four months service at three washings per day, a metering chamber, and a continuous duty, moisture proof solenoid valve control which operates at 110 volts, 50-60 cycles.

The metering chamber automatically fills up because of a gravity-type feed design. In operation, the solenoid actuates two rubber diaphragms, one on each side of the metering chamber. As the solenoid is energized, it opens the metering chamber to allow a controlled amount of wetting agent to pass into the dishwasher. As the solenoid valve is de-energized, the chamber is automatically filled with the specified volume of wetting agent. Injection time is said to be virtually instantaneous.

The dispensing volume itself can be varied by design to suit any customer specifications. Because it is relatively simple in construction, the new dispenser can easily be tested without the use of any kind of special testing equipment. For additional information, write Dept. MPM, Detroit Controls, 5900 Trumbull Ave., Detroit 8, Mich.

WHAT'S YOUR
A.M.
PROBLEM?



A.M. (Air Movement) is a source of new and bigger problems for the air conditioning, heating, ventilating and refrigeration manufacturer. However, we have an answer for one of your headaches—a reliable source for blower housings. DE-STA-CO offers you all these advantages:

- Low unit cost. Our standard high production dies (no tooling cost) are ready to turn out any large or small quantity.
- Complete assemblies or parts. Our method assures low costs either way.
- Broad range. For wheels 3 1/4" to 9 5/8" diameter, all widths.
- Fast delivery. Many in stock, both parts and assemblies.
- Adaptations often practical. For your special purpose housing consult us on a variation of a DE-STA-CO Standard and SAVE!

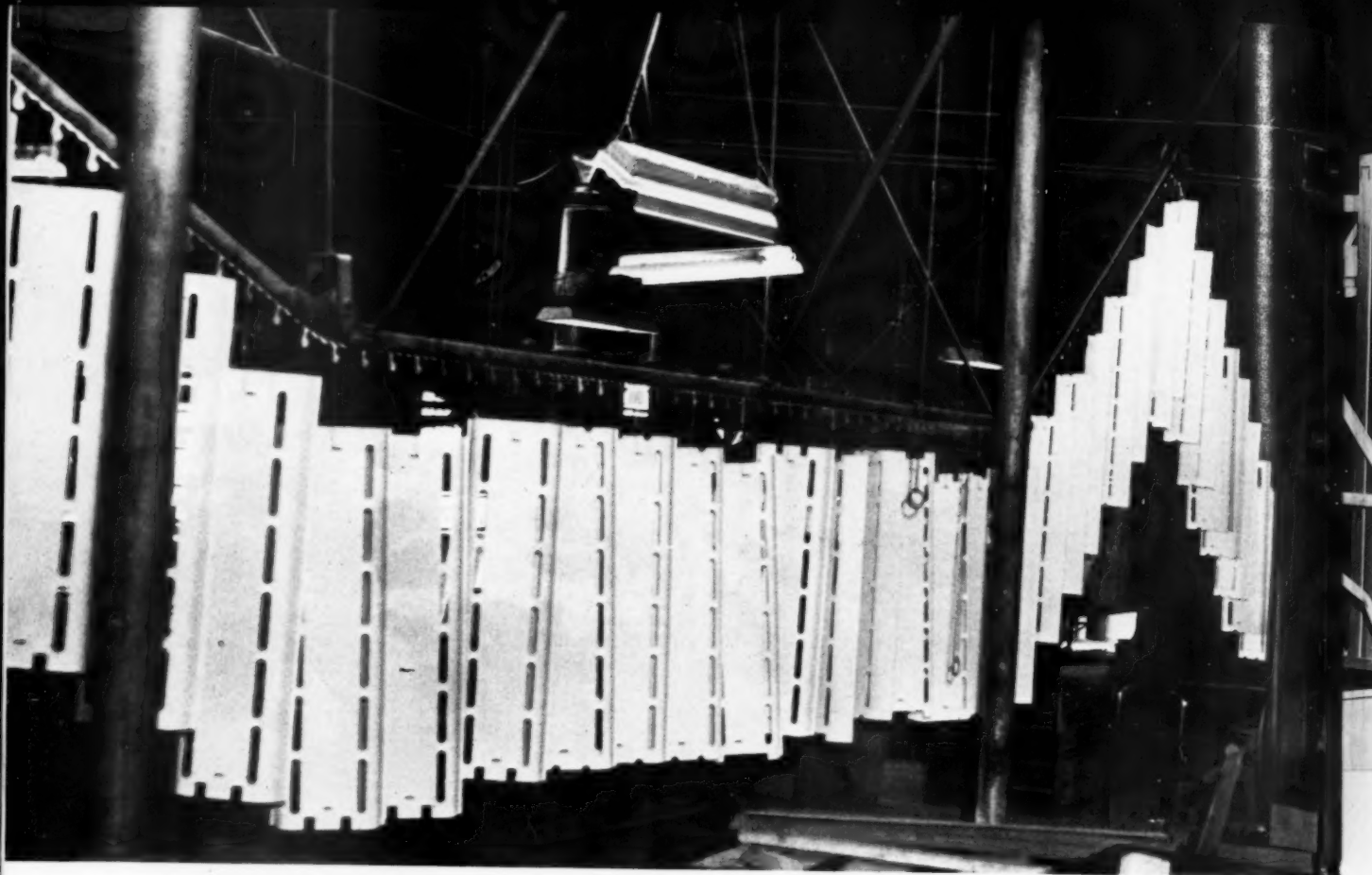
Write for literature and prints or send us your drawings and quantity needed.

A **DE-STA-CO** Product

DETROIT STAMPING COMPANY

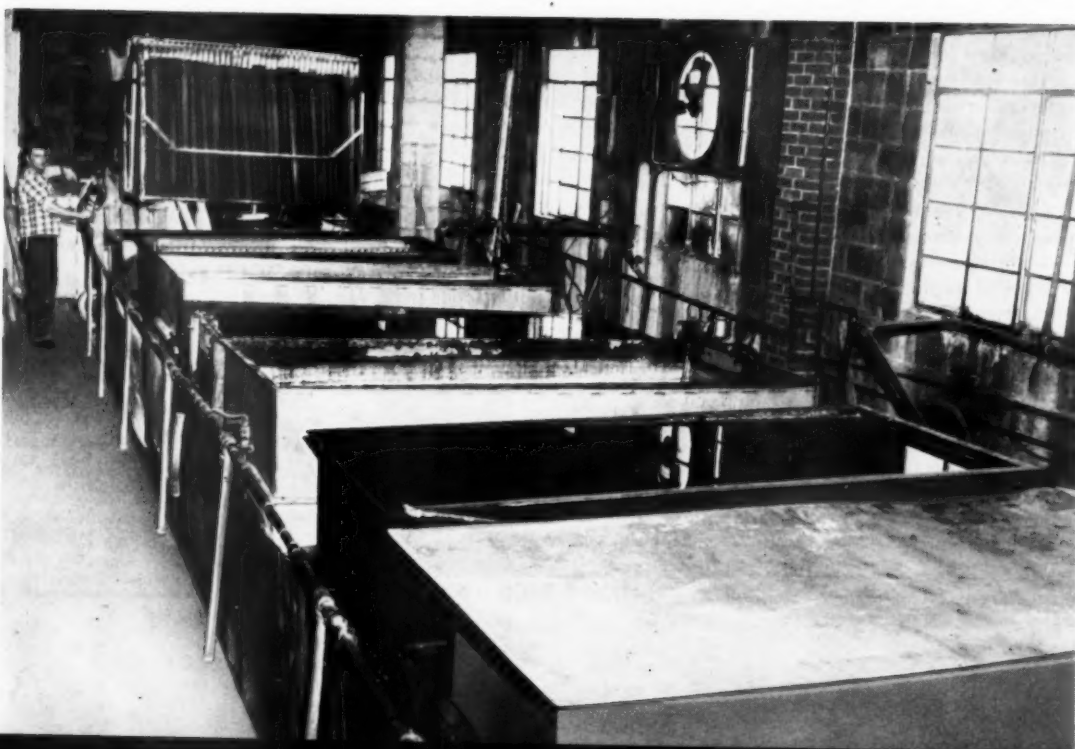
404 Midland Avenue • Detroit 3, Mich.

Serving air conditioning, refrigerating, heating and ventilating industries for 40 years

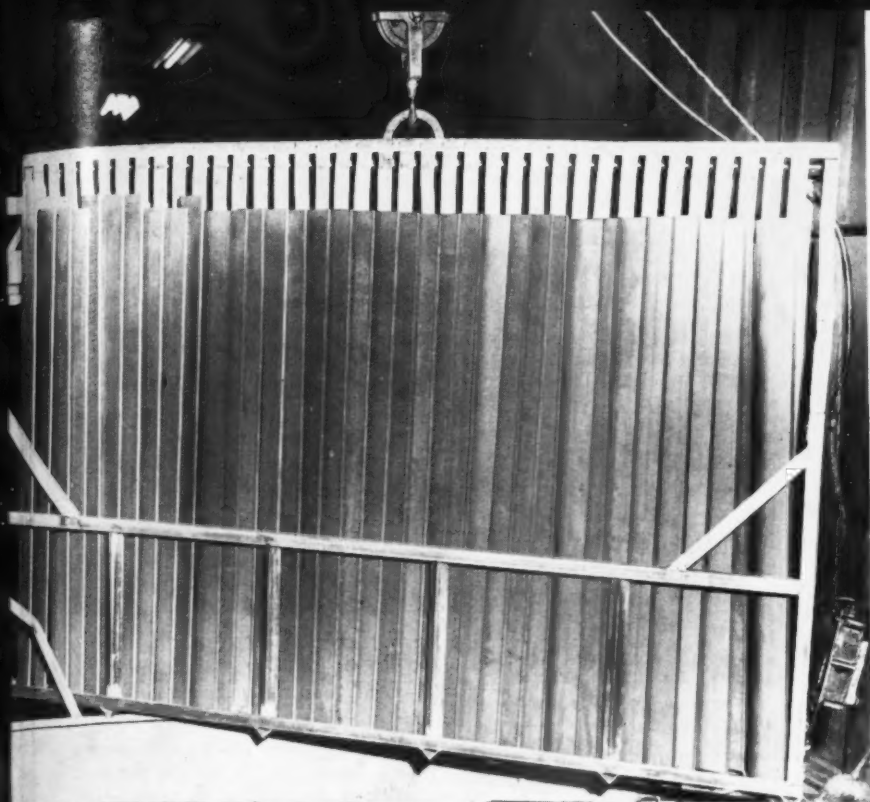


A major break-through in white "Direct-On" porcelain enameling

this first report on a break in the "sound barrier" of conventional porcelain enameling follows



General view of pickling room. The success of the one-coat process is due mainly to the rigid controls exercised in metal preparation. Cleanliness is imperative so that no scale is introduced back into the ware that would produce enameling defects.



Closeup of pickle basket showing how ware is separated.

M P M
EXCLUSIVE
FEATURE

During the past six months, Hanson Porcelain Enamel, Inc., a job enameling shop located about thirty miles from Boston, Mass., has run over two and one-half million square feet of one-coat titanium enamel applied directly to non-premium cold rolled steel. Hanson has

"glassier" finish and has virtually no orange peel. The biggest problem before the inception of this program was damage in transit by chippage, even though the merchandise was moved by the company's own trucks. The process has virtually eliminated this nemesis of the industry. Other advantages are improved impact resistance, adherence to sharp edges, and high torsion resistance — the

Enameling follows six months of successful plant operation

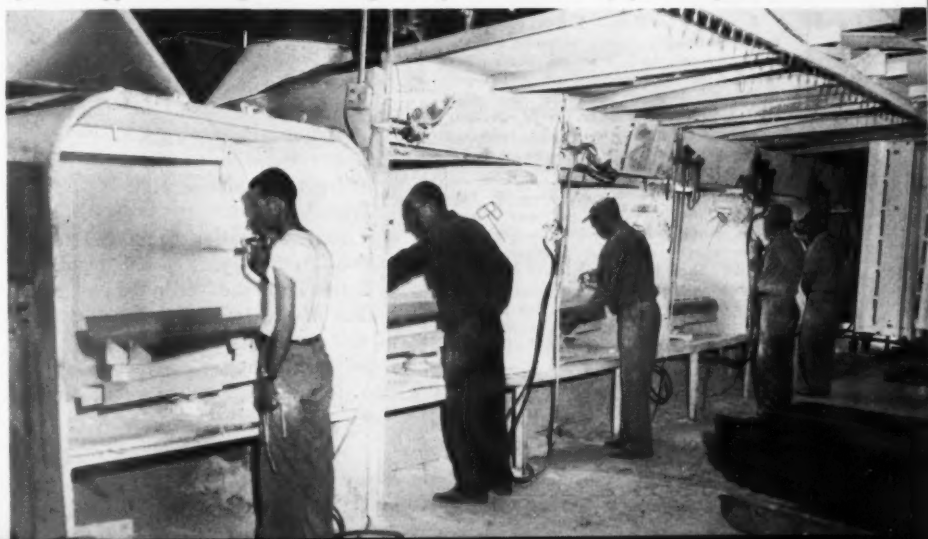
proved that with proper controls this one-coat system of porcelain enameling is a production reality.

When this program was first considered, Hanson's management immediately recognized the obvious virtues that such a process would offer to the industry. In April, 1958, the company, in cooperation with their frit supplier, started production experiments which led in September, 1958, to full scale production of the "Direct-On" and the complete elimination of the ground coat process. It was during the experimental phase that all the necessary equipment was installed gradually, and the operation of the process became more and more successful.

One of the major reasons why Hanson was so interested in pursuing the "Direct-On" process was to offer a superior product to the industry. By this process, the surface texture has a

steel is more flexible, and it can be deformed to a greater extent without damage to the enamel surface. Ultimately, the process should offer a financial gain.

View of spray booths. Ware is sprayed at conventional specific gravity and pick-up, and application is governed to give a fired thickness of four to five mils.



Better than ninety-five per cent one-coat acceptance

One-coat acceptance has averaged better than 95 per cent since this program was started and yields an excellent re-op percentage with minimum coverage and repairs needed. Many products processed with this one-coat process need only be enameled on one side, as in the case of air-conditioner units. This is due to the formation of a corrosion-resistant nickel oxide layer.

A number of systems for applying porcelain enamel of cover coat quality in one fire have been proposed. Special steels have been produced for use with conventional cover coat application in one coat, and at least one of these is in commercial use. The desire to reduce costs and improve quality spurred on the work which led to the success of this program at Hanson. Other systems for enameling regular steel with one coat of titanium have had some success in pilot plant operations. This is the first reported instance of successful, 100 per cent conversion to a one-coat system. The quality of finished ware has been beyond expectations, officials state.

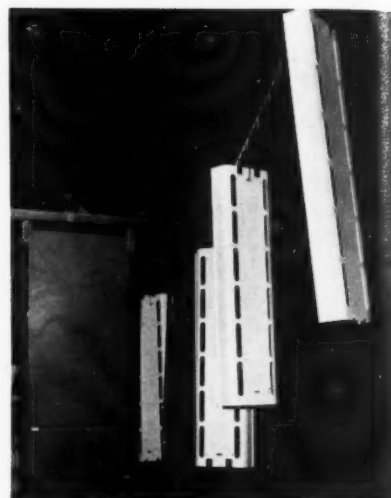
The secret is metal preparation

According to Hanson engineers, the success of the one-coat program is due, in great part, to the rigid controls exercised in metal preparation — the key to good operation. A breakdown of these operations is as follows:

1. Good boiling cleaning, followed by a hot rinse and an overflowing cold rinse.
2. Dry thoroughly.
3. Anneal at approximately 1200° F. and hold ware at this temperature for two to three minutes.
4. Phosphoric acid pickle at 120-130° F. for five to seven minutes. Pickling is completed when all scale is removed.
5. Two-stage cold rinsing.
6. Reduction nickel to deposit .05 to .09



(Left) — Control laboratory, showing titration equipment and colorimeter.



(Right) — Reflectors coming out of dryer.

grams nickel per square foot.

7. Thorough rinsing and drying.

Several points should be noted here:

1. Uniformity of cleaning, rinsing, drying, and annealing contributes to a uniformly-processed part.

2. Pickling cycles need close control, due to varying rates of pickle from different lots and/or sources of steel.

3. Good rinsing, using clean water, is a necessary precaution at all stages of rinsing.

4. High iron concentration in the acid tank retards scale removal. Ion exchanging to remove this iron is necessary.

5. Nickel deposition is controlled by keeping the single nickel salts, the sodium hypophosphite strength, and the pH within their specified limits.

Careful handling, storing, etc., are necessary throughout this process, particularly after pickle where it becomes imperative that no soils are introduced back on to the ware that would produce enameling defects.

EDITOR'S NOTE

The April, 1959 issue of MPM carried a roundup feature summarizing the results to date in the application of one coat white "Direct-On" porcelain enamels.

The editor's introduction included the statement "... but to date no plant has turned over its entire production to this method of porcelain enameling ..."

A phone call and letter followup from Harold T. King, Hanson Porcelain Enamel, Inc., Hanson, Mass., informed MPM editors that this New England company has "for the past six months ... been in (direct-on) production 100 per cent, as a jobbing shop using regular 20-gauge cold rolled steel ..."

This information appeared in the Editor's Mail column of our June issue, along with announcement that MPM would carry a feature article on the Hanson plant and its "Direct-On" enameling operations. It is our pleasure to present this important information in the accompanying article for the benefit of MPM readers.

Enamel preparation and application

Milling: Mill addition and frit selection studies have been made to determine the best combinations for this process. Chloride mill additions are avoided, soluble salt content is kept low, and urea is no longer needed as an after-milling additive.

Frit selections are made on the basis of surface texture, adherence, and fish-scale resistance.

Enamel is milled on the fine side 1/2-1 gram, using a 50 cc. sample through a 200-mesh screen. As in normal grinding, precautions should be taken to guard against any contamination.

Application: All ware is sprayed at conventional specific gravity and pickup. Application is governed to give a fired thickness of from four to five mils.

Firing Procedures: Parts are fired at 1350-1400° F. for approximately five minutes. When re-work is run, the time is cut down to three or three and one-half minutes.

Inspection and Control: From the time that the raw steel starts in process, it is under constant inspection and control. Inspection is particularly important after annealing, after pickling, and after firing. Very careful control must be exercised at frequent intervals.

Equipment and steel requirements

The following new equipment normally needs to be added to a porcelain enamel plant embarking on the one-coat program:

1. Stainless steel tanks for phosphoric acid and reduction nickel.
2. Ion exchange equipment to remove iron from phosphoric acid.
3. Nickel filter.
4. Chemical titration equipment to run normal controls plus nickel deposition.
5. Extremely fast dryer in the pickle line.

One of the important considerations of this process is steel selection. Cold rolled steels that are non-fishscaling and have low pickling rates are those used

most successfully. As continuing improvements and refinements are made in the process, the results are production proved in the plant. This allows for new techniques to be rapidly and accurately evaluated on production equipment.

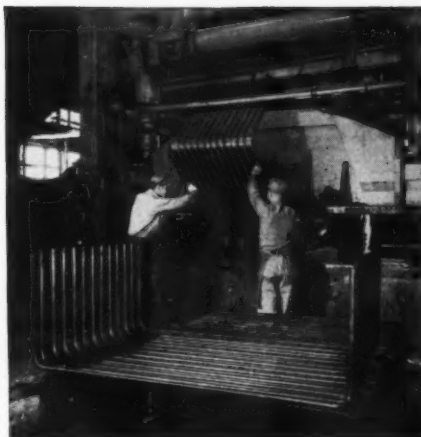
It is now possible for the company to porcelain enamel shapes and parts which previously did not lend themselves to this finish, such as the following: kitchen cabinets, venetian blinds, wire products, appliance exteriors, gasoline pumps, air-conditioning units, office equipment, outdoor metal furniture, automotive parts, bathroom accessories, shelving, storage bins, etc.

Hanson Porcelain Enamel, as a part of a diversification program, is continuously running production samples of items such as those listed, in an effort to offer the advantages of one-coat porcelain enamel to the manufacturers of additional products.

Packing reflectors into crates.



**Forming sides of a
Flo-Matic box at Powell
Pressed Steel Co.,
Powell uses Youngstown
Hot-Rolled and Cold-
Rolled Sheets, reports
operational uniformity, low
fabrication cost.**



Accent on Excellence

**Youngstown hot-rolled and
cold-rolled sheets**



ORIGINATORS OF COLD FORMED, ALL STEEL MATERIALS HANDLING CONTAINERS

Ingenious Flo-Matic Systems simplify flow of work in process, eliminate costly, multiple production handling.

Fabrication of Flo-Matic Systems involves shearing, blanking, piercing, pressing, forming and welding. The Powell Pressed Steel Co., Hubbard, Ohio, uses Youngstown Hot-Rolled and Cold-Rolled Sheets for consistent specified product quality. Thus, Youngstown steels help Powell keep product cost well in line—a matter of no small importance in selling to the materials handling equipment market.

Wherever steel becomes a part of things *you* make, the high standards of Youngstown *quality*, the personal touch in Youngstown *service* will help you create products with an "accent on excellence". The Youngstown Sheet and Tube Company, Youngstown, Ohio. Carbon, Alloy and Yaloy Steel.



Youngstown



Design features of the Waste King dishwasher-dryer

AN MPM DESIGN FEATURE

WASTE KING CORP., Los Angeles, started with a survey. As an automatic dishwasher manufacturer, the company was vitally interested in what the housewife *didn't like* about the present dishwashers . . . and it found out.

A great majority of the women wanted elimination of pre-scrubbing sticky dishes and a dishwasher that would give them spot-free glasses and silverware.

In response, Waste King intro-

duced a line of eight deluxe and eight custom models which clean, for example, greasy breakfast dishes and crusted pots and pans through the use of two wash cycles before the actual complete dishwashing cycle. A wetting injector system assures the spot-free drying by dispensing into the final rinse water a liquid chemical which prevents formation of spot-producing droplets due to minerals and dissolved solids present in the water. A feature of the line is its large loading capacity. A full place setting for eight, plus serving dishes, may be put into one load. The oven-type, pull-down door makes two vinyl-covered, drawer-type racks easily accessible, since they roll out individually.

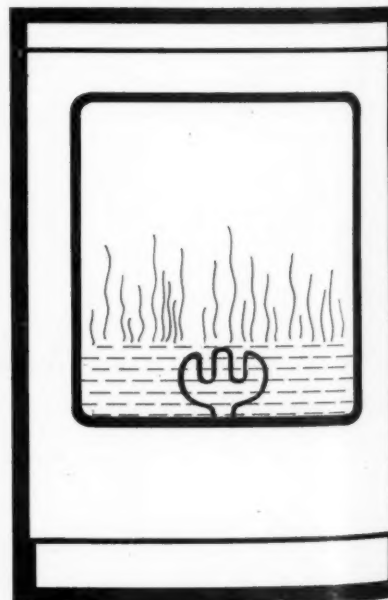
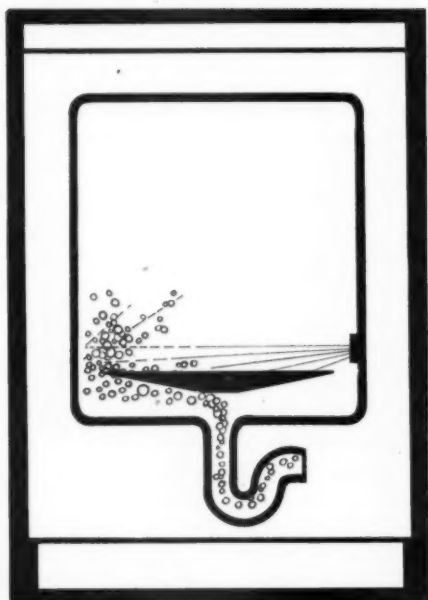
Silverware and cutlery baskets are removable from the racks, free-standing, and can be loaded with fork tines, spoon bowls, and knife blades facing down for better sanitation and safety. Either one or both dividers in the upper basket is easily inverted or removed to facilitate loading meat platters, over-sized plates, tall glasses, or large bowls. This makes random loading possible.

Both the deluxe and custom dishwashers have control knobs at the waist level that pull out for starting. The deluxe units also are equipped with a

POSITIVE SUDS FLUSH OUT. During this cycle, which immediately follows the power pre-rinse and introduction of the detergent, as well as the beginning of the wash phase, a positive suds flush out takes place which prevents recirculation of soiled wash suds and food particles. Fresh water is then circulated over the dishes for approximately two minutes during the first rinse, then drained off. By using this process, only fresh, clear water is circulated over the dishes for their rinsing.

WATER CIRCULATION. An unusually-high rate of water circulation — 60 gallons per minute — through 58 jet-like ports in the distributor arm assures effective dishwashing. In addition, new contour racks and squared baskets enable the water streams illustrated to more easily reach every plate, cup, glass, and piece of silverware. Water consumption of the "deluxe" model is nine gallons, and eight gallons in the "custom." The water is distributed by a stainless steel water distributing arm.

HEATING AND DRYING. During the final rinse in the "deluxe" model, rinse water is raised to 155° F. by means of a thermostatically-controlled heating element. In the "custom" model, the heater stays on throughout the cycle. During drying cycle, in the "deluxe" model, unit goes on and off as necessary to maintain constant sanitary drying temperature. In the "custom" model, heater stays on throughout cycle. (Near end of this cycle, a pump goes on to drain out water which is condensed in tub.)



**wetting agent injector system,
large loading capacity featured
in both deluxe and custom models**

series of three pushbuttons, making it possible to select a special pre-wash cycle, "pots and pans" cycle, or the full washing and drying cycle.

Pushing the first button on the deluxe unit's control panel and pulling out the operating knob activates a pre-wash cycle which washes away sticky substances. A second pushbutton controls the pre-rinse, wash, and first rinse "pots and pans" cycle, which is designed for crusted cookware and non-heat resistant plastics. The pre-wash cycle takes $3\frac{1}{4}$ minutes, the "pots and pans" cycle $17\frac{1}{4}$ minutes.

Details of the washing cycles

At this point, with the operating knob turned to "start," the full cycle is activated by pushing a third button and pulling out the control knob on the deluxe model. To activate the full cycle on the custom model, the knob is pulled out. A power pre-rinse in the deluxe model, or flush pre-rinse in the custom model, removes any stray food particles.

A detergent cup on the inside of the unit's door automatically injects the liquid before the start of the wash cycle. This is succeeded by a positive "suds flush out" which prevents recirculation of soiled wash suds and food particles in the clear rinse water.

Dishes then go through two fresh hot water rinses. During the first rinse, the water is circulated over the dishes for approximately two minutes, then drained off. In the deluxe model's final rinse, water is raised to 155° F. by means of a thermostatically-controlled heating element before the rinse begins. The heating element remains on during the complete cycle in the custom model. Here, the wetting agent injector system introduces the detergent automatically into the final rinse. A stainless steel water distributing arm with 58 spray holes assures thorough water distribution at the rate of 60 gallons per minute.

Constant drying temperature

When the drying cycle begins, the heater fluctuates as necessary to maintain a constant, sanitary drying tem-

A special "pre-wash" cycle enables all eight models in the new Deluxe dishwasher line to wash dishes clean. Pushing a button and pulling out the operating knob of the units activates a $3\frac{1}{4}$ -minute cycle which makes it possible for dishes, glassware, and silverware to be thoroughly rinsed immediately after a meal.



perature in the deluxe model. As in the case of the washing cycle, the custom model's heater remains on during the drying cycle. The dishwasher shuts off automatically, the full cycle lasting $37\frac{1}{2}$ minutes in the deluxe model, 45 minutes in the custom model. Water consumption is nine gallons in the deluxe, eight gallons in the custom.

In addition to under-counter and free-standing models, the line includes portable and portable-with-drop-leaf-top models, the latter two having special features. Snap-on ball bearing swivel casters, coated with rubber composition, assure quietness and prevent marking of floors. An adapter kit permits connection of the two five-foot water connection and discharge hoses, and a special grounding adapter plugs into wall sockets as a permanent installation, accommodating conventional two-pronged plugs. The faucet adapter has a built-in aerator.

In all models of the line, one motor is used for both wash and pump out action. It is a $1/6$ hp, 115-volt, 60 cycle motor that is permanently lubricated, and has overload protection with an automatic reset. The single motor is used for both washing and drying. All major parts on the free-standing and under-counter units may be serviced without removing the cabinet; timer controls can be reached by removing the control panel.

A filter screen in the dishwasher tank traps food particles, preventing their re-

circulation, and is removable for cleaning.

Sound absorption considered

Sound-absorbing insulation and cushioned mounts are installed at all noise-producing points to eliminate vibration. Fiber glass panels subdue the splash of swirling water. The tanks and doors of all 16 Waste King models are coated with a polyvinyl finish.

Under-counter and free-standing models are 24 inches wide and $25\frac{1}{2}$ inches deep. The heights of these units are $34\frac{1}{2}$ inches and 36 inches, respectively, though each may be lowered as much as one inch without the use of special tools.

The portable model is 24 inches wide, $25\frac{1}{2}$ inches deep, and measures $36\frac{3}{4}$ inches from floor to working surface. The portable unit with the drop-leaf top has the same width and height as the standard portable, although its distance of $38\frac{1}{4}$ inches from floor to working surface is slightly greater. Each drop leaf is $10\frac{3}{4}$ inches long.

Door and lower front panels are available in a variety of decorator colors, stainless steel, copper, or several types of wood. Natural wood or plastic panels can be installed or changed to harmonize with existing cabinetry.

The deluxe portable has a white sequin plastic drop-leaf top with a spattered gold effect. Custom units are available with plastic tops in five hues and patterns . . . tan linen, white skylark, gray linen, birch picwood and primrose skylark.



Annual Appliance Technical Conference

EXCLUSIVE MPM PHOTOS

APLIANCE INDUSTRY ENGINEERS met at the Hotel Manger, Cleveland, Ohio, on May 18-19 for the 10th Annual Meeting of the AIEE Appliance Technical Conference. In addition to a full schedule of technical papers for the two-day meeting, the program was supplemented by a tour of the Lighting Institute at Nela Park (General Electric Co.) and, for those interested in applications to gas appliances, a tour of the American Gas Association Laboratories.

Must speed up development

O. H. Yoxsimer, Westinghouse Electric Corp., Springfield, Mass., in the opening address of the meeting, said that we must develop products at a greater rate for the coming years. Consumer products represent 38.5 per cent of the total electrical manufacturing market (1958); he said. To demonstrate the change in products sold and used, he stated that one-third of the sales today consist of products that did not exist in 1946.

With the population headed for 237 million by 1978, we should look for 408 billion kwh by 1968, and 745 billion kwh by 1978.

Heating and cooling present the best potential in the electrical field, in the opinion of Yoxsimer. He said there are now one-half million homes heated electrically (1958); it is expected that there will be 2.2 million by '68 and 8 million by '78. Under the most favorable conditions, he said, this could be boosted to 10 million by '68 and 20 million by '78.

Dynamic surface tension in home laundry solutions

Dr. Gale Cutler, Whirlpool Corp., reported on studies of surface tensions of

solutions, and pointed out that in home laundry appliances, new "surfaces" are continually formed with the life span in micro-seconds. Dr. Cutler discussed the effect of wetting agents and detergents, both of which lower the surface tensions and, he said, tests for surface tension will not distinguish a wetting agent from a detergent.

Seconds, and possibly less, represent the maximum surfaces for application of surface tension under agitating conditions.

Dr. Cutler said that to get full value out of the electrical developments in home laundry equipment, calls for study of "washing" conditions. Absolute control of rate of flow is necessary in experimental equipment. This requires special constant flow apparatus.

Urethane foams on increase in the appliance industry

J. A. Ratto, Pelron Corp., led an interesting discussion on urethane foams which have been getting increasing attention in the appliance field.

The main interest in urethane, said Ratto, is the high strength versus low weight ratio.

In answering the question, "What is it?" he said, "It is nothing other than a linkage of a hydroxyl-bearing compound and isocyanate (TDI). The hydroxyl compounds may be polyesters, resins, polyester-resins, and castor oil. Peculiarity of foaming and temperature

(Right) — The "Light for Living Center" at the GE Lighting Institute, Nela Park, showing staff lecturer, Miss Emmie Lou Craig, in the display kitchen.

M. A. Fuller, Whirlpool Corp., Chairman, Subcommittee on Domestic Appliances.



AN MPM STAFF REPORT

characteristics control the choice."

Foams may be rigid, semi-rigid, and resilient. Rigid types have closed cells, while resilient types have open cells. Thermal insulation, in general, calls for the highest percentage of closed cells possible — 85 per cent to 95 per cent.

For those who use urethane foams, the problem is to translate the product of the chemical supplier into a reproducible product for production use. The materials balance is extremely critical.

Ratto stated that the best resins made will end in a "miserable" foam if mixing is improper; the K factor might start at .13 and in one month go up to .19 or .22. The foam rate and gellation rate are critical, he said.

A test for a good foam, according to Ratto, is (1) proper formula and (2) proper mix (and no variations). Only materials should be varied.

Following Ratto's comments, one of



TENTH ANNUAL AIEE-SPONSORED MEETING



B. F. Parr, Westinghouse Electric Corp., AIEE Commercial and Domestic Applications Committee vice chairman.



O. H. Yoxsimer, Westinghouse Electric Corp., "... Heating and cooling load can be about anything we want to make it . . ."

the engineers suggested that no one should come out with a foam product without careful consideration. "Take your time," he said, "and know what you are doing, or the market for a good product may be ruined."

Applying computer techniques

Richard Prucha, General Electric Co., described how computer equipment is being used for determining temperature distribution in the insulation of a refrigerator, detect leakages through complex configuration, and predetermine where "sweating" may occur.

The system should have an accuracy of one-half of one per cent for normal applications. The machine used for the work described in the paper can compute a problem in three minutes that would take thirty men one and one-half hours.

Selecting correct lamps for appliance service

W. R. Stephens, General Electric Co., outlined the four factors involved for standard low wattage, low voltage lamps for appliances as (1) vibration, (2)

shock, (3) temperature and (4) moisture.

Vibration: Vacuum cleaners, laundry equipment, sewing machines, and all other motor-driven appliances are involved. Distortion of the filament results in thermal stress. Filaments may heat to 4000° F. Protective methods

are: (1) add supports (they drain heat); (2) operate at lower temperatures; (3) and use special wire.

There is no safe way of rating lamps from laboratory testing, according to Stephens. The only good test for vibration problems is to run tests on the products. The kind of sockets and method of attachment have much to do with lamp life on appliances. Physical shocks, such as closing doors, etc., are important to lamp life.

to Page 58 →

Left to right: Speakers Dr. Gale Cutler, Whirlpool Corp., and J. A. Ratto, Pelron Corp., with Henry Martin, Martin-Rettger, Inc., chairman Cleveland section AIEE.



Panel photo showing left to right: A. P. White, Metals & Controls Corp.; James Wright, White-Rodgers Co.; William Vermeulen, General Electric; C. J. Holtkamp, Westinghouse Electric Corp.; and W. R. Buechler, General Electric Co.



W. R. Milby, Detroit-Edison; T. H. Cline, The Newark Ohio Co.; A. G. Ostrognai; D. W. Mohrman, General Electric Co.; and L. (Les) Dogger, Whirlpool Corp.



Local conference committee, left to right: E. G. Olthuis, D. H. Brennan, D. B. Ralsten, A. G. Ostrognai, and E. G. Merrick. Committee members not in photo: John Lushbaugh and F. K. Bayless.



Major Appliance Division, NEMA, plans for the future

executives discuss reorganization, profit planning, electronic cooking, thermoelectricity, appliance servicing, and National Electrical Living program

AN MPM STAFF REPORT

EXCLUSIVE MPM PHOTOS

THE MAJOR APPLIANCE DIVISION of the National Electrical Manufacturers Association met at The Inn, Ponte Vedra, Florida, on May 25, 26, and 27. Members were welcomed to the meeting on Monday by out-going Division Chairman C. K. Rieger of General Electric.

The first speaker of the day was Dr. F. D. Rosi, head of Semiconductor and Metals Research, Radio Corp. of America. He made an excellent presentation on thermoelectricity and its application. He outlined the basic principles of thermoelectricity and the progress that has been made in basic research during recent years.

National Electrical Living Program

Frank Kitzmiller, of Edison Electric Institute, pointed out what this EEI-sponsored program has been accomplishing during the current year. He presented several of the EEI television commercials which are currently beamed at the ladies during daytime television hours. He also showed a 30-page supplement which is scheduled to appear in the September 15 issue of *Life* magazine. This will be a \$1 million ad. In addition to *Life's* circulation, they plan to distribute over four million reprints. Also coming up this fall will be an all-electric laundry festival promotion and an all-electric gift parade in November.

For 1960, the EEI is planning a program that will be more closely inte-

grated, more aggressive, and which will place more emphasis on electric space heating and cooling.

Electronic cooking

J. Penn Rutherford, manager Industrial Apparatus Division, Raytheon Co., pointed out that, to date, electronic cooking has not been sold to the consumer. Sales of electronic cooking equipment to be used for commercial cooking have been excellent, but the concept of electronic cooking must be sold by the industry to the American public.

Rutherford feels that the market for electronic ovens should reach a level of 100,000 units by 1965. He also feels that electronic ovens will be sold in combination with conventional ovens and conventional surface units in free-standing models. He urged that the industry get ready today in order to plan for the 1962 market.

The final speaker on Monday morning's session was William P. Frankenhoff, partner, William E. Hill Co., management consultants, who spoke on

(Left to right) — E. O. George, vice president, Detroit Edison Co.; William P. Frankenhoff, partner, Wm. E. Hill Co., management consultants; J. Penn Rutherford, manager, Industrial Apparatus Div., Raytheon Co., and Dr. F. D. Rosi, head of Semiconductor and Metals Research, Radio Corp. of America.



E. P. Van Sciver, Philco Corp., vice chairman, and Harold E. Martin, The Hobart Mfg. Co., chairman, of the Household Sink Units Section.

profit planning. He outlined three aspects of profit: (1) profit margin, (2) profit stability, and (3) profit growth. He also stated that there were four important stages of profit planning: (1) setting of corporate profit objectives, (2) establishment of proprietary objectives, (3) planning new profits—specific profit aims, and (4) programming your marketing and other functions.

In summarizing, he said that there were eight key factors that a company needs in order to succeed, profit-wise, in the next ten years:

1. Real marketing position with consumer.
2. Building technical strength into the company. Utilize newer technology in company.
3. Focalized development — determine the direction of your moves.
4. Multi-markets — to assure profit stability.
5. Ride a growth curve.
6. Balanced product line.
7. Profit oriented management.
8. Capital feasibility.

Appliance servicing

On Tuesday, E. O. George, vice president, The Detroit Edison Co., and two associates presented an interesting demonstration as to what some manufacturers have done to make appliance servicing easier. It was also pointed out that some manufacturers have failed to take the necessary steps to accomplish this objective.

George's major plea was that more attention be given to the servicing of





Nancy Nema

A. L. Chopp, chairman public relations committee, Electric Range Section, advertising-merchandising manager Range Department, General Electric Co., presented an interesting sound and color slide presentation on the "Nancy Nema" program. Nancy Nema and the kitchen of Nancy Nema have been successful as of this date, and it is anticipated that the program will continue to gain headway. Chopp suggested that there is no reason why this promotion can't be broadened to include promotion of other sections of the Major Appliance Division, in addition to the Electric Range Section.

In a closed session, W. C. Wickman, chairman of NEMA Planning Committee, vice president of General Electric Co., and general manager of Hotpoint Division, outlined the proposed reorganization of NEMA.

Both the Electric Water Heater Section and the Household Sink Units Section reported that their promotion activities for the year 1959 have been extremely successful. E. M. Haines, chairman of the Dishwasher Activities Committee of the Household Sink Units Section, and general manager of Kitchen Appliance Dept., Hotpoint Div., General Electric Co., reported that in a six-month period, over one hundred utilities have indicated cooperative plans, and some 227 newspapers have ordered editorial material devoted to electric dishwashers.

F. A. Lowery, chairman of the Activities Committee, Electric Water Heater Section, and manager of the Water Heater & Kitchen Utilities Dept., Westinghouse Electric Corp., stated that

appliances at the design stage. If the products are designed so that parts are more easily accessible to the serviceman in the field, servicing of appliances can be handled more readily and at less expense to the consumer. He also urged that manufacturers change as few parts every year as possible; this would eliminate the necessity for service organizations and the manufacturers, themselves, to maintain large inventories of spare parts. Another plea was that the manufacturers design products so that it is not necessary for service organizations to buy a great many special tools in order to properly service appliances.

The demonstration was a real eye-opener, and it is probable that management in attendance at the meeting will see to it that more attention is given in the future to the problem of servicing of appliances at the design stage.



nearly one hundred utilities have indicated plans for local tie-in ad campaigns, and that some 200 publications across the country have used the special "Live Better Electrically" supplement.

J. A. Hurley, vice president of Whirlpool Corp., was elected new chairman of the Major Appliance Division; and H. L. Travis, vice president of Kelvinator, was elected vice chairman. The Household Sink Units Section elected Harold Martin of Hobart Manufacturing, chairman; and Edward Van Sciver of Philco Corp., vice chairman. The Electric Water Heater Section elected F. A. Lowery of Westinghouse chairman, and H. T. Hulett of General Electric vice chairman.

Next year's meeting is scheduled for either late May or early June. The exact time and place have not as yet been determined.

EXCLUSIVE MPM PHOTOS

(Upper left) — F. A. Lowery, Westinghouse Electric Corp., chairman; and H. T. Hulett, General Electric Co., vice chairman of the Electric Water Heater Section.

(Upper right) — John A. Hurley, Whirlpool Corp.; and Homer L. Travis, Kelvinator Div., new chairman and vice chairman of Major Appliance Division.

(Left) — C. K. Rieger, General Electric Co.; and W. A. Wendler, Amana Refrigeration, Inc.

(Right) — Joseph Rushton, Frigidaire Div., General Motors Corp.; and Homer L. Travis, Kelvinator Div., American Motors Corp.



End view over payoff
reels. Machine is com-
pact, only 13' by 104'.



New Meaker Anodizing machine delivers uniform high quality plus versatility

This Meaker anodizing machine was built to meet the requirements of the Allmetal Weatherstrip Company. It handles aluminum strip in widths up to 18", thicknesses from .0071" to .032", and at speeds from 2 to 6 FPM. In the illustration above, five strips are running simultaneously at 3 feet per minute, producing a total of 900 lineal feet of anodized and waxed aluminum every hour.

Meaker engineered and supplied this installation complete with every detail, including: a 6000 ampere generator, refrigerating unit, ice bank, hot air blowers, payoff and take-up reel systems, and the Meaker-built anodizing and wax dip unit itself.

Why don't you take advantage of Meaker's complete service when you need plating and anodizing equipment... it's backed by a reputation for building the best for 50 years.



Arrangement of take-up reels allows easy removal of aluminum rolls to forming operations.

MEAKER

Write for
further
information

THE MEAKER COMPANY • 1629 S. 55th AVE. CHICAGO 50, ILL.

The 27th Annual Convention-Exhibit of IAM

profits and prestige, retail selling problems,
service, and world trade are headlined subjects

AN MPM STAFF REPORT

EXCLUSIVE MPM PHOTOS

SMILES WERE ON THE FACES of the great majority of members and guests of the Institute of Appliance Manufacturers who met at the Netherland-Hilton Hotel in Cincinnati on June 1-3 for the 27th Annual Convention-Exhibit sponsored by the Institute.

Among the headlined speakers was Bernard A. Chapman, executive vice president and general manager of the Appliance Division (Kelvinator, Leonard and ABC), American Motors Corporation. His subject was, "Rebuilding prestige and profits in the appliance industry." Sharing the spotlight with Mr. Chapman was C. Virgil Martin, president of Carson Pirie Scott & Company, Chicago, and a well known speaker on the subject of sales. His subject was, "What are retailers really selling in appliances?"

Heading an interesting session on service were Margaret Davidson, home-making editor of the Ladies' Home Journal, representing the homemaker's viewpoint on the subject, and Robert P. Lewis, director of consumer relations, Whirlpool Corporation, speaking for the manufacturers.

CHAPMAN
"increasing the size of the pie"



Appliance comparison figures "astounding"

In his report to the convention, F. H. Guthrie, president of IAM (president, The Newark Ohio Co.), in referring to the latest Institute survey of business trends, compared the first four months of 1958 with the first four months of this year as representing figures that are "astounding."

For example," he said, "cooking appliances (all fuel types combined) are up 24 per cent this year. Electric built-in ranges are 47 per cent over last year, and gas built-ins are up a phenomenal 58 per cent. Space heaters are up 10 per cent across the board." In suggesting the industry's approach to the future, he said, "I personally do not feel that we should approach the future with this speculative fever that seems to be gripping the nation, but I do believe we can face it with reasoned optimism."

In referring to the "slump" preceding the better business for appliances, he said, "From August 1955 almost to the end of 1958, we paid the full price, and we should have learned some lessons.

MARTIN
"what are retailers really selling?"



IAM President Guthrie is caught by the MPM cameraman as he admires the new cover of the Institute's magazine.

Now is the time to correct some of the faults that caused the poor sales for three long years."

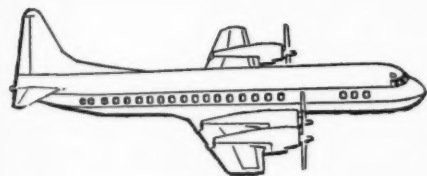
Guthrie cited two major considerations in the industry which he considers need complete overhauling immediately: (1) the dealer-manufacturer relationship and customer confusion and (2) the cost-price relationship. In referring to his first point, he said, "Our responsibility cannot end when our units leave our factories. We must help dealers in generating sales, in repeating sales, and certainly in servicing sales."

Helping the dealer seek his rightful place as a dependable business man entails having his salesmen know the products, the research and development that has gone into them so that he can sell them enthusiastically on their merits to the consumer, said the IAM president.

Under his cost-price relationship theme, Guthrie said, "All too often, price has been set, not as it related to the cost of manufacture, but to meet the price of a competitor's product. . . . But when our profit structure suffered as a result of this practice, what did we do? We started emphasizing price and almost price alone. . . . The fallacy here, however, is that this price-cutting undermined the housewife's confidence in the product."

"Advertising of the true innovations and added benefits that have marked almost every appliance in the past ten years has not been strong enough to offset the damage done by price-cutting. . . . Appliances sold in cartons may be the cheap way, but it is also the sure

Experience—the extra alloy in Allegheny Stainless



ANTI-ICING DUCTS, made from Allegheny Ludlum AM350, are designed to withstand temperatures to 700F and pressures to 200 psi. Wall thicknesses .025 in. to .187 in.; outside diameters, 1½ to 4½ in.

made from Allegheny Ludlum precipitation-hardening stainless:

Prop-jet's anti-icing ducts take high heat and pressure in stride

The anti-icing system of a new prop-jet airliner was designed to operate under high heat and pressure, yet the ducting had to be as light as possible. AM350 was specified. Both AM350 and AM355, Allegheny Ludlum's precipitation-hardening stainless steels, have strength/weight ratios at 600F five times greater than the usual aluminum aircraft alloy. In fact, AM350 and AM355 maintain high strength from room temperature up to 1000F.

These space age metals have other properties highly desirable: excellent corrosion resistance, ease of fabrication, low temperature heat treatment, good resistance to stress corrosion.

These features have been used to advantage in airframe structural members, airframe skins, pressure tanks, power plant components, high pressure ducting, nacelles and other missile and supersonic aircraft applications.

availability: AM350, introduced several years ago, is available commercially in sheet, strip, foil, small bars and wire. AM355, best suited for heavier sections, is available commercially in forgings, forging billets, plates, bars and wire.

corrosion resistance: Compared to the more familiar

stainless grades, AM350 and AM355 resist corrosion and oxidation better than the hardenable grades (chromium martensitic) and only slightly less than the 18 and 8's. They resist stress corrosion at much higher strength levels than do martensitic stainless grades.

simple heat treatment: High strength is developed by two methods. Both minimize oxidation and distortion problems. The usual is the Allegheny Ludlum-developed sub-zero cooling and tempering (SCT): minus 100F for 3 hrs plus 3 hrs at 850F. Alternate method is Double Aged (DA): 2 hrs at 1375F plus 2 hrs at 850F.

easy fabrication: AM350 and AM355 can be spun, drawn, formed, machined and welded using normal stainless procedures. In the hardened conditions, some forming may be done . . . 180 degree bend over a 3T radius pin. Also AM350 can be dimpled in the SCT condition to insure accurate fit-up.

For further information, see your A-L sales engineer or write for the booklet "Engineering Properties, AM350 and AM355." Allegheny Ludlum Steel Corporation, Oliver Building, Pittsburgh 22, Pa. Address Dept. MG-19.

WSW 73-1

ALLEGHENY LUDLUM

EVERY FORM OF STAINLESS . . . EVERY HELP IN USING IT





MARGARET DAVIDSON
"a small but articulate group"

(Left to right) — S. J. Ferrier, managing director, E. S. & F. Ferrier Pty Ltd., Australia; Enrico Baj-Macario, president, Comité Européen Des Fabricants d'Appareils de Chauffage & de Cuisine Domestiques, Italy; and J. M. A. Klep, manager, "De Etna," Breda, Holland.



way to run into servicing headaches. . ."

Further on appliance prices, Guthrie pointed out that appliance prices are lower today than on almost any other competitive product. This, he said, is no credit to the manufacturers, because costs of materials and labor have gone up as much as those of any industry. He urged price adjustments that would cover the new features and conveniences that are being built into products "every month of the year."

In closing, the IAM president said, "Let us not forget our obligations to ourselves, to our community, and to our stockholders—that we, as manufacturers, must show a proper return on investment. Without a profit you fail and have no right to be a part of our economic system."

Bewildering claims and phony price comparisons

In opening his remarks to the convention, Mr. Chapman said that a continuing expansion of markets for ap-

pliances could only result from a new perspective toward marketing goals. He deplored the "unwarranted and unrealistic expansion of production facilities" based simply on the desire for a larger share of the existing market. As a result of these policies, he said, "the industry in general compensated for the discrepancy between virtually stable prices and rising costs by reducing service organizations, squeezing money out of long-term research for product improvement, and reducing advertising expenditures when declining sales needed advertising support most. This also had the effect," he said, "of reducing distributor and dealer profits and prestige."*

Chapman feels that perhaps the most important accomplishment of the appliance industry during the past year

*(EDITOR'S NOTE: While Mr. Chapman made no reference to suppliers in connection with this comment, it would seem that he might well have added a reference to the "squeezing" of the components and materials producers.)

Members of the Charcoal Grill Manufacturers Assn., which met in conjunction with IAM, include (Left to right)—Joseph D. Brown, Poloron Products, Inc.; Robert O. Soman, Brevel Products Corp.; Vincent Veno, secretary, Charcoal Grill Manufacturers Assn.; W. C. Neumann, Union Steel Products Co.; Luke O. Morin, Chattanooga Royal Co.; Wallace S. Schermer, Union Steel Products Co.; Gordon Sutton, Arvin Industries, Inc.; and William Gundaker, Chattanooga Royal Co.



has been the development of a better mutual understanding within the industry, including more man-to-man talking by top-level personnel, thus creating a healthy intra-industry attitude at the manufacturer level. He also feels that there is improved understanding by dealers and wholesalers.

"Bewildering claims" and "phony price comparisons" particularly in local advertising, have served only to "confuse and discourage the potential customer," Chapman said.

"The most important contribution manufacturers can make to improve the profit structure and prestige of the industry is to refrain from unwarranted and unrealistic expansion of production facilities" he said. He feels that the source of the trouble has been a perspective distorted by a mania in the country for "volume." In his opinion, increased appliance sales during the next few years should absorb most of the excess production that has been built up and, in turn, provide a basic foundation for sounder pricing practices in the industry and a resultant better return to the manufacturer, wholesaler, and dealer.

In referring to the individual manufacturer's "take" from existing business, Chapman said, "Wouldn't it be better for each of us, in the long run, if we want a larger piece of pie, to analyze carefully the contribution we can make to increasing the size of the pie?"

The American Motors executive feels that more advertising must be spent by the appliance industry as business increases. He pointed up the fact that in 1951 magazine advertising on appliances amounted to slightly more than magazine advertising on automobiles—\$19,870,598 as compared to \$19,159,833. In contrast to this, the period from 1951 through 1958 shows the appliance industry spending a total of \$161,165,875 in national magazines, while passenger car manufacturers spent \$249,028,487 during the same period.

to Page 60 →

REPUBLIC GALVANIZED SHEETS HELP ASSURE THE FABRICATION OF FIRST-CLASS PRODUCTS



*... such as these air conditioning
ducts in ultra-modern
new Cleveland building!*

The Illuminating Building — Completely "Climate-Controlled" Throughout

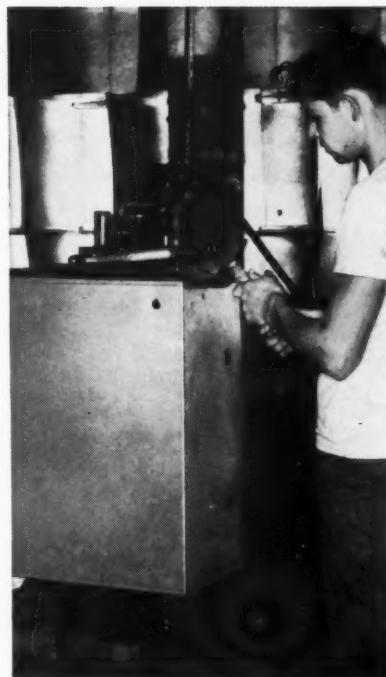


Republic Galvanized Sheets played a prominent part in the fabrication of air conditioning ducts for Cleveland's new 23-story Illuminating Building.

The same high quality that guided this selection should also guide yours, if you are interested in producing metal products of first-class quality. Republic Continuous Galvanized provides rigidity, and the capacity to meet a wide range of fabricating requirements at low cost.

Its uniformly-tight zinc coating will not crack, flake, or peel even under the most severe forming operations. Excellent corrosion-resistance makes Republic Galvanized your best choice in many fabricating applications.

Other Republic Sheet Products include stainless steel and Electro Paintlok, both described elsewhere on these pages. For full information on Republic's complete line of sheet products, contact your local warehouse—your steel service center—or send coupon.



HIGH-QUALITY WORKMANSHIP combined with Republic ENDURO® Stainless Steel helps S&S Metal Products Company, Lima, Ohio, produce fine beverage dispensers. Their stainless steel liners, shown above in the process of fabrication, are a clear mark of superiority. Users will find the interior of these dispensers unsurpassed in their capacity to resist corrosion and abrasion. Find out how Republic Stainless Steel can pay off on your jobs. Mail coupon now.



BEAUTY PLUS DURABILITY are characteristics of mobile homes which American Coach Company, Cassopolis, Michigan, sheaths with Republic Electro Paintlok® Steel Sheets. Electro-galvanizing, combined with a special paint-adhering chemical treatment, retards corrosion, and assures a bright long-lasting finish. Get more information on Republic Electro Paintlok—mail coupon.

REPUBLIC STEEL



*World's Widest Range
of Standard Steels and
Steel Products*

REPUBLIC STEEL CORPORATION
DEPT. MG-7760-A
1441 REPUBLIC BUILDING • CLEVELAND 1, OHIO

Please send more information on:

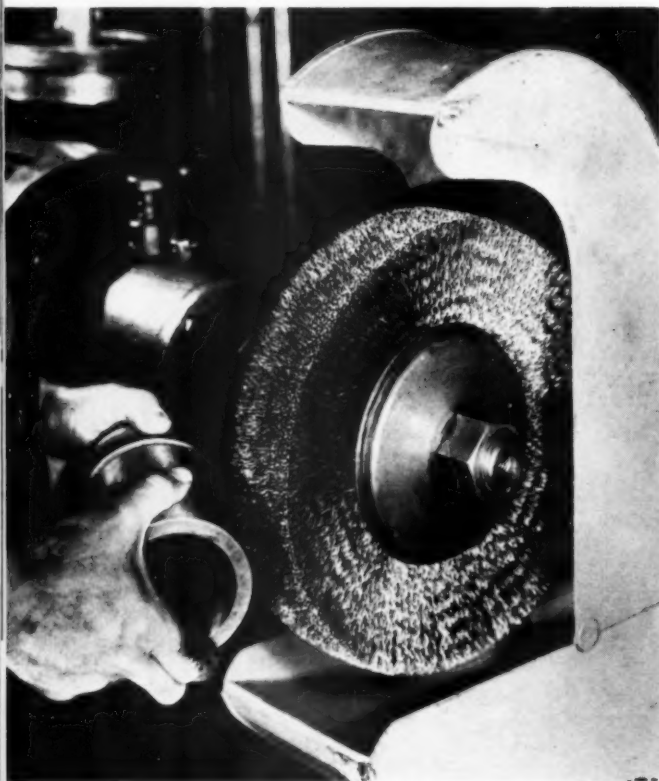
☐ Galvannealed ☐ Stainless Steel
☐ Electro Paintlok

Name _____ Title _____

Company _____

Address _____

City _____ Zone _____ State _____



some basic methods used in the finishing of metal, as they apply to . . .

Polishing with power brushing

Fig. 4 (Left) — Removing scale from a steel part after heat treating. A ten-inch wide-face wire wheel, .0104 wire, is being used at 3000 rpm on a floor polishing stand.



Fig. 1 — Satin finishing aluminum washing machine gyrator, using 12-inch brushes, .0104 wire, at 2200 rpm (narrow face wire).

POLISHING, as a part of the finishing process, has a double meaning. One meaning is broad, "Preparation of any surface for further treatment." The other meaning is narrower and deals with "the final appearance of the surface."

Two basic factors generally control the finish of any product —

1. *The material being finished* — It is well known that an inherently hard material such as steel will take a higher lustre than a soft material such as aluminum. Therefore preliminary treatments that affect the hardness of metal such as heat treating, drawing, and rolling have a marked bearing on the degree of lustre produced.
2. *The selection of proper power brush* — The correct brush or brushes with the correct buffing compound, if needed, are perhaps the most important factors for a good finish. The action of, kind and size of the brush, its operation, its speed are factors affecting the desired finish.

Power brushing as a production tool

Power brushing methods are finding considerable extension of uses as production tools for metal finishing operations. Their ability to supplement the action of long used polishing or buffing

tools in the production of surface suitable for plating and of the finished polished surface, and at the same time provide considerable cost saving, are the important factors responsible for in-

Fig. 2 (Right) — Thirty-four treated tampico brushes, mounted with spacers on semi-automatic machine with reciprocating table, blend draw marks on waffle iron covers prior to plating.

Fig. 3 (Below) — Inline machine equipped with treated tampico fiber brush heads polishes automotive trim strip.

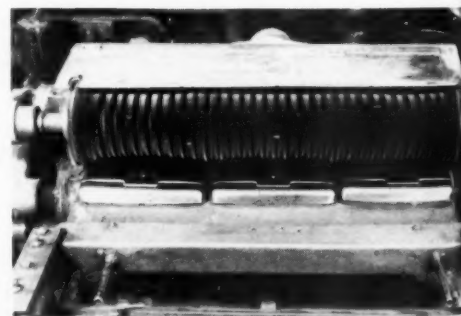




Fig. 5 — Satin finishing stainless steel fluted siding for railroad passenger cars. Two heads of narrow-face wire brushes are run at 3450 rpm.

creasing the popularity of brushes as finishing tools.

Power brushing equipment is also readily adaptable to additional ranges of size, and to additional parts of similar geometric shape. One of the major advantages of the power brush is that it can be used manually (Fig. 1), in semi-automatic operation (Fig. 2) or in fully integrated methods (Fig. 3).

The demands for speed, quality and efficiency are fulfilled economically by the power brush. Polishing for plating is carried on for five principle reasons.

- 1 — *To insure the best work surface* — the power brush has the polishing quality of blending or flowing of surface irregularities.
- 2 — *Reduce friction* — the power brushing is able to finish surfaces as smooth as 8 micro-inches r.m.s.
- 3 — *Protect against stain and corrosion* — a brushed smooth finished surface without scratches, pits and sharp edges offers resistance to oxidation or discoloration.

- 4 — *Produce a better product* — the product quality is improved by power brushing to provide a better appearance and increased life-span.
- 5 — *Improve the quality and final finish of a plated item* — since quality in many cases is dependent on the finish applied to the base metal.

Three primary brush characteristics

In selection of the proper brush method for finishing, three primary brush characteristics are involved: flexibility, finishing, and speed of action.

The *flexibility* of a brush determines the extent to which it can contact low spots or narrow recesses on a surface and the extent to which it has a lifting or shearing action on surface contaminations or projections.

The *finishing ability* of a brush determines how fine a surface can be produced.

The *speed of action* of a brush determines the rate at which contaminations are removed and projections are cut down.

All common metals can be brushed but proper brush selection depends on the hardness and electrolytic corrosion characteristics of the metal. Only fiber brushes are used for relatively soft metals such as zinc. For metals such as stainless steel, aluminum and magnesium, fiber brushes can be used, alone or after previous wire brushing, to prevent electrolytic corrosion resulting from em-



Fig. 6 — The flexibility of this eight-inch diameter, .005 wire special brush enables it to reach all surfaces of this irregular part.

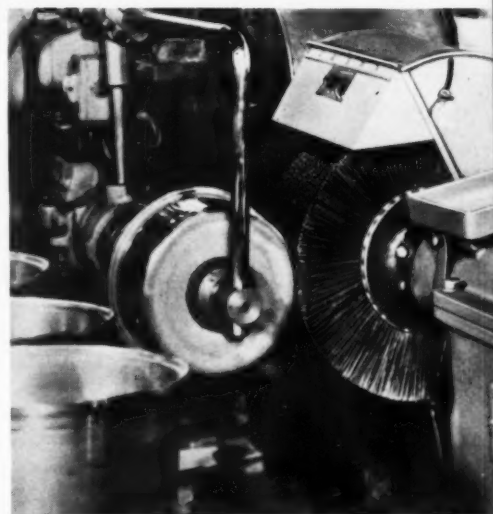


Fig. 7 — Polishing stainless steel utensils to a high finish with cord brushes.

Fig. 8 (Below) — Polishing stainless steel golf club heads with 16 inch treated tampico fiber brushes and stainless steel compound.



EDITOR'S NOTE

MPM editors wish to thank personnel of the Engineering department of the Brush Division, The Osborn Mfg. Co., for technical assistance in connection with the preparation of this article. Acknowledgment is also given to Osborn for photographs used as illustrations.

MAC-BOND 71-D A 3-STAGE METAL PREPARATION SYSTEM

THE SIMPLIFIED PHOSPHATE OPERATION

- 1 Combination cleaner and phosphatizer.
- 2 Water rinses.

This test sheet was not protected with Mac-Bond.

- 3 Provides a chemically sealed coating for maximum corrosion resistance.

This test sheet was protected with Mac-Bond 71-D.

THAT GIVES THE PERFECT PAINT BOND

MAC-BOND 71-D IS
BEING USED
SUCCESSFULLY ON:

CAMERAS • MOLDING
• APPLIANCES • TAPE
RECORDERS • TV
CABINETS • LAWN
FURNITURE • TOYS •
OFFICE FURNITURE •
AND MANY OTHER
PRODUCTS

Mac-Bond 71-D is a highly efficient and economical cleaner and phosphatizer suitable for pressure washers and still-tank cleaning and giving a maximum paint bond and rust resistant coating.

Metal products manufacturers, both large and small, are finding the Macco 3-Stage System is solving their paint-adhesion problems with utmost dependability and economy. (Also adaptable for one to six stage operations.)

WRITE OR PHONE FOR A MACCO SERVICE ENGINEER TO SHOW YOU
HOW THIS SYSTEM CAN SAVE YOUR PLANT MANY OPERATING DOLLARS

MACCO
PRODUCTS
COMPANY

9210 SOUTH SANGAMON STREET • CHICAGO 20, ILL.

THERE'S A MACCO CLEANER COMPOUNDED TO SOLVE
YOUR PARTICULAR PROBLEM • PHONE PRESCOTT 9-0800

bedded particles. A stainless steel wire brush may be used on stainless and some light metals.

Brushing equipment for magnesium must include a dust collecting system to avoid explosions.

How to select brushes

The following brushes are basic power brushes designed to produce certain desired finishes for appearance and plating:

Wide face wire wheel brushes (Fig. 4) — are best for general purpose jobs, being used to work on such metals as steel, stainless steel, nickel alloys, brass, bronze, and copper. They are able to produce finishes having a surface roughness in the range of 20 to 25 micro-inches R.M.S. when filled with .005" wire. These wheels are capable of pro-

and steel items, these brushes are used when finishing where a bright to medium coarse satin finish is required.

Stainless steel brushes are available for brushing aluminum, stainless steel and other alloy steels.

Special wire brushes (Fig. 6) — may be designed with long flexible trim which reaches and brushes irregular surfaces. In the construction of this type of brush, tufts of wire are individually anchored by hand in the metal center so that in use each group of wires flexes as a unit, thus reducing wire breakage. In the smaller diameters this type of fine wire brush is used by platers, manufacturers of art metal goods, hand instruments and builders' hardware, ranging in mirror to dull matte finishes on stainless steel, silver, copper, brass or bronze metal items.

Cord brushes (Fig. 7) — combine the best qualities of brushes and buffs. They are made of special cords securely locked in by the metal ringlock construction. These brushes are used with abrasive compounds for polishing, finishing and burring metal parts.

It is possible to secure a variety of fine finishes ranging from mirror to dull matte, depending on the brush style, size, speed and compound used. The fast cutting action and firm cushion of the cord reduces the danger of "drag lines" and "fish tails" in polishing parts made of metals and of contours which induce "drag lines" during the buffing operation.

These brushes produce fine finishes and high color. They are especially useful in irregular surfaces because of their inherent flexibility. The cord brush is a superior finishing tool especially outstanding for use with stainless steel to remove "orange peel" and impart high color and for the working of a fine finish on stainless steel, copper, bronze, brass, zinc, silver and nickel alloys. It is usually possible to reduce the number of polishing heads required when employing these brushes.

Treated tampico fiber brushes (Fig. 8) used with abrasive compounds are outstanding for removing burrs, tool marks and blending surface junctures. They are also excellent for similar finishing work especially that which must be done to reduce the frequency and severity of stress risers which weaken a part. These brushes improve surfaces for plating and surface finish for appearance, producing fine finishing results on such metals as silver, zinc, copper, stainless steel and bronze. They remove small burrs resulting from machining and grinding and produce surfaces being in the range of 4-20 micro-inches R.M.S.

Untreated tampico fiber brushes (Fig. 9) have greater flexibility than treated brushes and are ideally suited for lighter operations requiring brush flexi-



Fig. 9 — Untreated tampico fiber brush is set up on brushing lathe for finishing of toaster shell to a high luster.

bility. They are used for surface finishing where the need for flexibility to get uniform surface coverage over-balances the need for fast brushing action, and are also specified for the surface finishing to obtain specific appearance, such as micro-dulling of the softer non-ferrous metals.

The high lustre, commonly referred to as color, is popular because of its pleasing appearance, and also for the greater resistance to staining and corrosion which is an attribute of the better finish produced by brushes. Such finishes cannot be put on a poor base. The preliminary operations are referred to as polishing. The latter stages of polishing can be accomplished very well by treated tampico brushes and a suitable compound.

Polishing, which is a preliminary surface treatment, has the first and most important effect upon the quality and costs of the final finish. Treated tampico brushes are used in the latter stages of the polishing procedure, but are used more like a buffing wheel than a conventional polishing in that the compound is applied loosely rather than as a fixed abrasive. This feature is very important and constitutes one of the big advantages of a treated tampico brush.

Tampico and cord brushes (Fig. 10) — can modify and change the condition of metallic surfaces very appreciably. It is this ability which gives these brushes value for polishing and buffing. The ac-

to Page 45 →



Fig. 10 — Stainless steel pans finished by a cord brush. The pan in the worker's right hand has been power brushed. Unfinished pan is in left hand.

ducing "satin" finishes which completely cover many defects that high mirror polishing tend to emphasize. It is often practical to use a wire somewhat coarser than .005" such as .008" to get faster finishing speed without getting an appreciable coarser surface finishing.

Narrow face wire brushes (Fig. 5) — will do excellent work on operations requiring a brush that is narrow and flexible. They are particularly suited for jobs where the area to be brushed is narrow, or the surface or edge not straight or flat. Being applied to brass, bronze, nickel and nickel alloys, zinc

Fig. 11 (Below) — "Before and After" power brushing had been applied to this automotive trim part. This chrome part was brought to a mirror finish.



WHITE DIRECT-ON

**porcelain enamels for
non-premium steels...**

**THINNER
COATINGS**

**SUBSTANTIAL
SAVINGS**

**TOUGHER
COATINGS**

**EXCELLENT
ADHERENCE**

**HIGH
CHEMICAL
RESISTANCE**

Another FERRO FIRST

NOW IN COMMERCIAL PRODUCTION

Industry's quest for *one-coat* white porcelain enamels for *nonpremium* steels is ended. Long sought . . . years in development . . . Ferro's new "White Direct-on" process has been field-tested in customers' plants for more than a year, has proved highly successful and is now in commercial production.

SAVINGS are substantial—varying, of course, with the products being finished. THINNER COATINGS ($3\frac{1}{2}$ mills minimum), plus *nonpremium* steels, plus reduced handling—all influence potential cost reductions.

QUALITY of the finish is excellent. ADHERENCE of the porcelain enamel to metal is equally so. The thinner, TOUGHER COATINGS provide greater resistance to damage from flexing and handling.

REFLECTANCE is easily controlled, meeting all standards for reflectors, home appliances, other exacting applications.

High ACID RESISTANCE, meeting industry standards for range tops, is no problem with "White Direct-on"

. . . nor is high ALKALI RESISTANCE as needed and specified by laundry equipment manufacturers.

EASY WORKABILITY in your plant is another feature. FIRING AT 1450-1550° F., Ferro's new "White Direct-on" finishes require no major changes in your porcelain enameling setup. And they are ADAPTABLE to the most modern, high-production, porcelain enameling systems (flow-coating, automatic spraying, etc.)

METAL PREPARATION is the secret of this new, lower cost finishing process. A new system of pickling and nickel deposition provides an excellent base for the "White Direct-on" porcelain enamel, especially developed for this process.

If you would like to use porcelain enamel and have felt you couldn't afford it—or if you are interested in cutting production costs of porcelain enameled products—Ferro's "White Direct-on" could be your answer. When can we come in and show you samples, tell you all about it?

New products, processes, production techniques, equipment



FERRO CORPORATION

4150 EAST 56TH STREET • CLEVELAND 5, OHIO
Nashville 11, Tennessee • Los Angeles 22, California

NEW

INDUSTRIAL LITERATURE

Subminiature Switch

Catalog number QPD 2000 describes a subminiature switch that is designed for panel mounting. The switch carries a 10-amp load, is shock resistant, and operates under light operating pressure. Available in either $\frac{3}{8}$ inch or $\frac{1}{4}$ inch thread sizes, it has .125 of built-in over-travel. The switch is said to provide in excess of ten million actuations. To obtain the catalog, write Dept. MPM, Acro Mfg. Div., Robertshaw-Fulton Controls Co., 2000 E. Main St., Columbus 16, Ohio.

Finishing Systems

Typical finishing system applications and specifications are shown in a bulletin now offered. The system designer claims increased product quality, lower operating cost, and greater safety. Except for loading and unloading of racks, the entire operation is automatic. To obtain the bulletin, write to Dept. MPM, Michigan Oven Co., 411 Brainard, Detroit 1, Mich.

Aluminum Finishing

"Finishes For Aluminum" is the title of a handy-size reference containing the latest information on this subject. The 28-page booklet starts with cleaning treatments and explains theory and methods for five major types of finishing operations—mechanical, chemical, anodic, organic, and porcelain enamel. Its aim is to provide information needed to select the best finish for a particular operation. Write to Reynolds Metals Co., Dept. PRD-9, Box 2346, Richmond 18, Va.

Automatic Merchandising

The 1959 Directory of Automatic Merchandising is now available at a cost of \$4.50 per copy. This 200-page book gives operating tips, purchasing information, and has a complete directory of products and services cross-indexed. Machine manufacturers, vendible products suppliers, and component parts manufacturers are listed. To obtain the directory, write Dept. MPM, National Automatic Merchandising Assn., 7 S. Dearborn St., Chicago 3, Ill.

Pre-Paint Treatment

An effective pre-paint treatment for the protection of fabricated steel products is shown in bulletin 1380, complete with selection chart. The non-metallic, phosphatate coating is said to provide an effective base for paint finishing and improve the corrosion resistance of the finished product. Write to Dept. MPM, Amchem Products, Inc., Ambler, Pa.

Appliance Industry Tooling

A 12-page die-cutting bulletin that is specifically directed to the appliance industry has been published. Thirty-eight photographs illustrate complex dies and tools, and show typical appli-



ance parts produced. These parts include range tops, sinks, refrigerator and heater panels, and washing machine, vacuum cleaner, and lawn mower parts.

Photos of the plant, facilities, and machine equipment are presented in the bulletin, also. A copy of this tooling brochure may be obtained by writing to Dept. MPM, Efficient Tool & Die Co., 9314 Elizabeth Ave., Cleveland 5, Ohio.

Circuit Breakers

Circuit breakers that protect against motor burn out and circuit overload are described in a new catalog. They can be factory set for any time lag so normal overloads can be tolerated. Pushbutton re-set models, as well as models for surface mounting which re-cycle automatically, are available. For the catalog, write to Dept. MPM, Mechanical Products, Inc., 1824 River St., Jackson, Mich.

Belt-Drive Duct Fans

Belt-drive duct fans with adjustable driver sheaves which permit adjustment of fan speed are featured in bulletin A-114A. The belt-drive duct fans come in sizes ranging from 12" to 60". Dimensions, performance data, and construction details are also given on direct-drive duct fans, reversible duct fans, and bi-pass duct fans, which have the motor mounted in a tunnel completely out of the air stream. Write Dept. MPM, Hartzell Propeller Fan Co., Piqua, Ohio.

Gearmotors, Motogears, and Fluid Drives

Information on a line of standardized gearmotors, motogears, and fluid drives has been combined into a 48-page book. Book 2747 describes the functions of various types of drives and provides detailed selection data, dimensions, overhung load ratings, and mountings. It also lists such accessories as couplings, backstops, and slide rails.

For a given gear frame size, the housing, low speed shaft, low speed bearings, and low speed gears are said to be a constant regardless of whether they are double, triple, or quadruple drives of any output speed. For the book, write to Link-Belt Co., Dept. MPM, Prudential Plaza, Chicago 1, Ill.

Mercury Switch

Bulletin 665 describes the operation of a miniature mercury switch. It is designed to be installed in the same manner as a cartridge fuse, and its spring clips or holders can also be used for mounting purposes. The switch consists of a cylindrical glass envelope with metallic end caps, a pair of electrodes, and a pool of pure mercury hermetically sealed within the closure. Operation is said to be noiseless and contact position readily visible. Write Dept. MPM, The Mercoid Corp., 4201 Belmont Ave., Chicago 41, Ill.

Automatic Screw Machining For Aluminum Stock

Automatic screw machining of aluminum is described in a 32-page booklet with schematic drawings and illustrations. The machine employs cams to move tools and stock to predetermined positions at definite rates of speed. It is used for machining aluminum bar stock to produce duplicate parts without an operator to activate each tool.

All shapes of bar stock can be worked, the maximum stock diameter

to Page 53 →

Power brushing

→ from Page 41

tion of a brush is that of blending imperfections and surface irregularities (Fig. 11) rather than the actual removal of metal.

It has been demonstrated that the blending action of a treated tampico brush reduces surface imperfections to a

Then with the answers to these questions a choice of brush can be made as to:

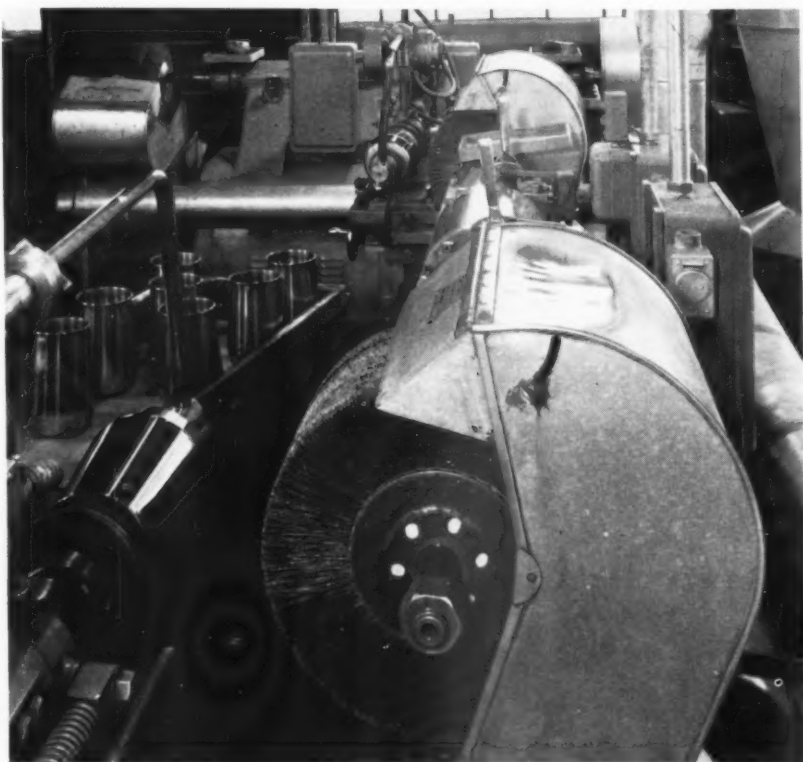
1—Type of fill material in brush (wire, fiber, nylon, etc.) 2—Diameter of fill material. 3—Length of fill material extending beyond face plates or brush backs. 4—Density of fill material. 5—Quality of fill material. 6—Diameter of brush. 7—Surface speed

or die castings to protect against corrosion . . . though sometimes as the finished plating, it can be "finished" from (wire, fiber, nylon, etc.) 2—Diameter tampico brushes used in conjunction with abrasive compounds will produce the desired finish.

Nickel Plate—depends on base finishing. If the base metal is well polished, the nickel plating will then follow suit in being nearly the same in finish appearance. A touch up with either a treated tampico, untreated tampico or cord brush.

Whether the application is a manual, semi-automatic, or fully-integrated finishing operation, versatile power brushing machines, and a wide range of brushing tools, now offer a proven solution to attain optimum production.

Power brushing is now accepted throughout industry as an effective means of burr and scale removal, surface preparation, juncture blending, cleaning and finishing.



The stainless steel body of a coffee urn is finished to a high luster by these lathe-mounted cord brushes.

point where a uniformly good plating job can be obtained. Cord brushes reduce any tendency to develop "drag lines" in the finish.

While the life of these brushes is relatively high, more important is the quantity and quality of the work produced.

Complete "finishing" of production items

The production of items not to be plated may be completely processed by power brushing. Such metals as aluminum, brass, magnesium, some copper, bronze, steel and stainless steel, silver alloys can be completely "finished" by the cost saving power brush.

The power brushing method generally applied depends on following factors:

1—What is the metal? Its conditions? 2—What are the shape and size characteristics? 3—What degree of finish is desired?

of brush. 3—Other special quality of fill material such as crimp in wire or nylon.

Preparation for plating

If, in the finishing of a manufactured article, the base metal is covered by a second metal applied by electroplating, a finishing process may be accomplished through a process of buffing by the power brush, if desired.

Chromium Plate—generally being in the order of .00002" thick. It is necessary that if the final finish is a high color, the metal under the plate should likewise be of same desired "finish"—while if a satin chrome is required this should be produced likewise on the metal before chrome plating. This plating may be finished to a mirror or satin finish by cord brushes with abrasive compounds using special cords as fill.

Copper Plate—used as a secondary plating over rough stamping, castings,

CLASSIFICATION OF POLISHED FINISHES:

MIRROR . . . no surface defects visible.

BUFFED BRIGHT . . . no surface defects visible but less brilliant.

BRIGHT SATIN . . . no surface defects visible but finishing lines visible.

REGULAR SATIN . . . no surface defects visible, but heavier finishing lines.

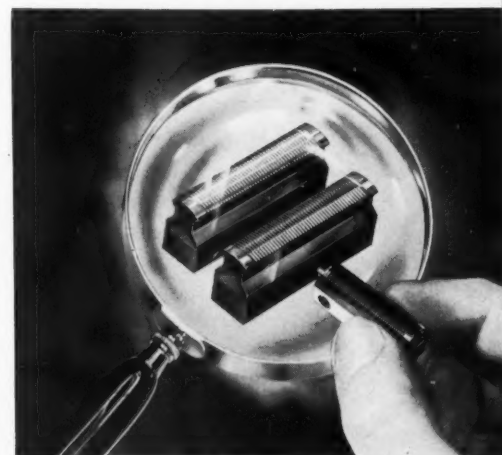
SATIN . . . some slight irregularities, heavy finishing lines.

DULL SATIN . . . very heavy finishing lines.

BRIGHT MATTE . . . etched or frosted finish with some lustre but no finishing lines visible.

DULL MATTE . . . dead etched or frosted finish with no lustre and no finishing lines visible.

(Below)—Power brushing has removed minute burrs and produced a high finish on these electric shaver heads.



*To avoid
spray booth
troubles*

ask Oakite

OVER 50 YEARS CLEANING EXPERIENCE • OVER 250 FIELD SERVICE MEN • OVER 160 MATERIALS



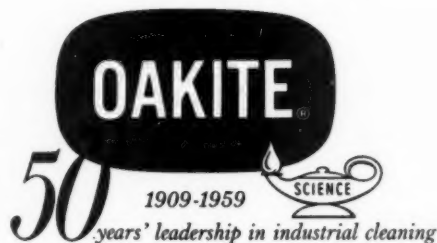
Oakite curtain water treatment takes the "tack" out of overspray

Just a few inexpensive ounces of the right Oakite additive in the spray booth water curtain save hours of clean-up time. The reason: Oakite chemicals surround each droplet of paint with an "anti-stick" film that keeps spray from adhering to walls, pumps, lines and water nozzles. Paint that doesn't settle or float immediately will still wash through the system—but it won't stick, won't clog the sprays. The result: a water curtain without gaps, a smooth running system, *no* unplanned downtime.

There's a full line of Oakite water additives... one to match any of the countless paints, enamels and organic coatings. The *right* one will help paint sink to the sump... or float to the surface for skimming off... or overcome special hard water troubles... or combat foaming problems. What's *your* problem? Ask the

Oakite man to make free tests in your paint spray booth. They won't interfere with production. They may save you hours of spray booth downtime. Bulletin F-9443 tells more. Write Oakite Products, Inc., 17 Rector Street, New York 6, N. Y.

it PAYS to ask Oakite



Technical Service Representatives in Principal Cities of U. S. and Canada

Finishing facilities built for current and future needs

MPM
EXCLUSIVE
FEATURE

When the Tupelo, Miss. plant of Day-Brite Lighting, Inc. was built, all indications were that its capacity would be sufficient for a long period. The plant was expanded three times in ten years to meet the demand, over and above original expectations. Recently, however, company officials realized that projected sales increases through 1965 indicated that more capacity was a must. In addition to this anticipated sales increase, obsolete equipment was beginning to create production headaches.

Day-Brite Lighting is said to be the nation's largest manufacturer of commercial and industrial lighting equipment. The general office and one of the plants are located in St. Louis. Tupelo, Miss. has benefited most from the ex-

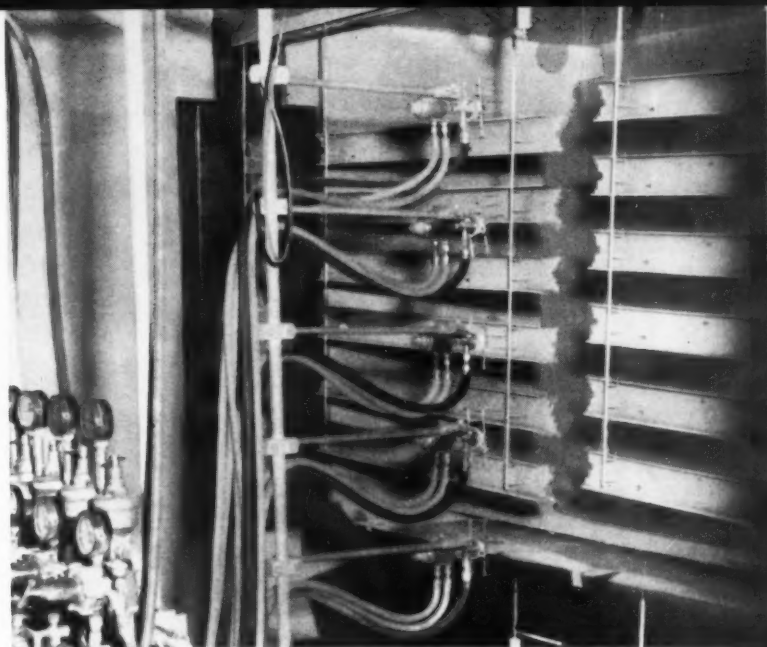
Completed parts are hung on the conveyor by hand, from where they proceed through finishing and on to assembly.

pansion of the company. Additions of manufacturing capacity and new high-production processes have been located there. A West Coast office and manufacturing plant are located in Santa Clara, Calif.

The additional painting facilities at Day-Brite are entirely new, not additions to the existing finishing facilities. The old equipment was removed, more space provided, and new, up-to-date

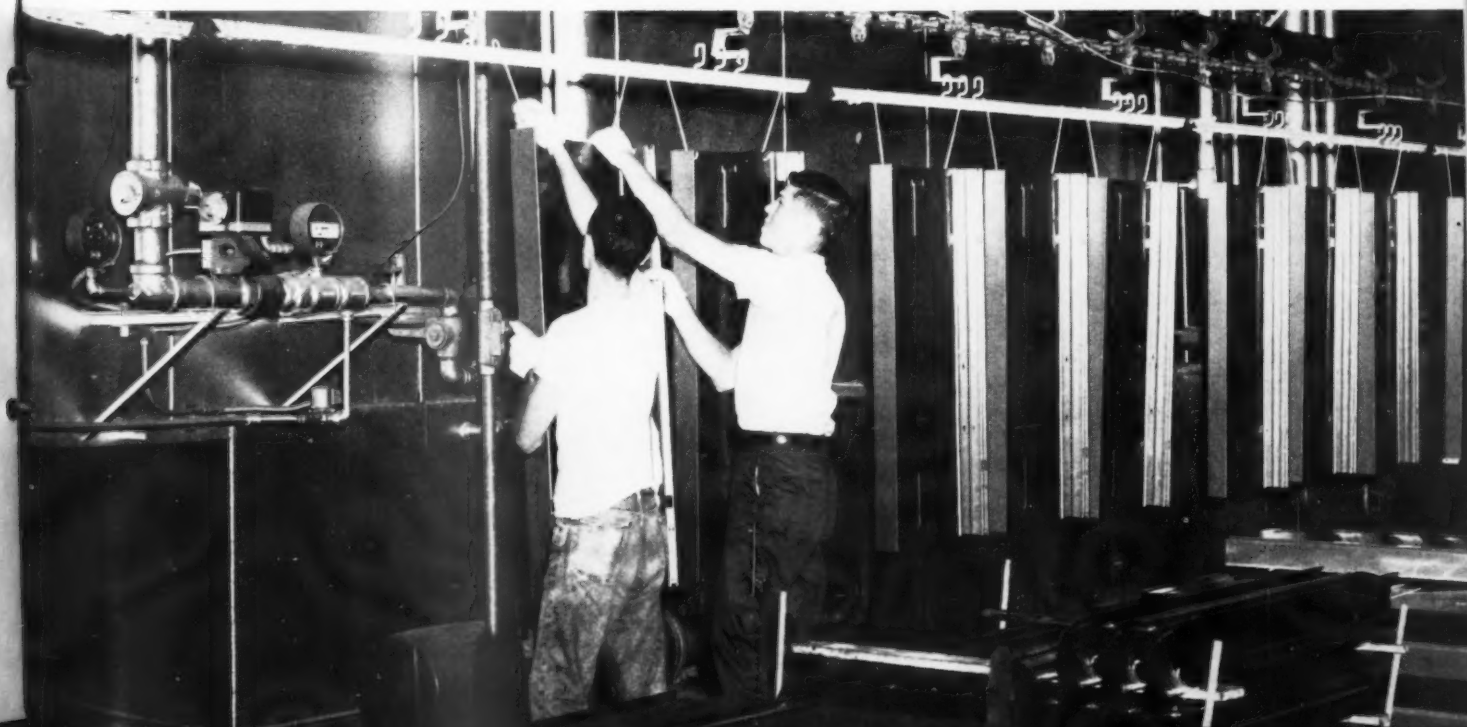
equipment installed, in a new two-story building area, totalling 40,000 sq. feet. Additional plant floor area needed for fabrication and other operations was obtained by the removal of the original paint system.

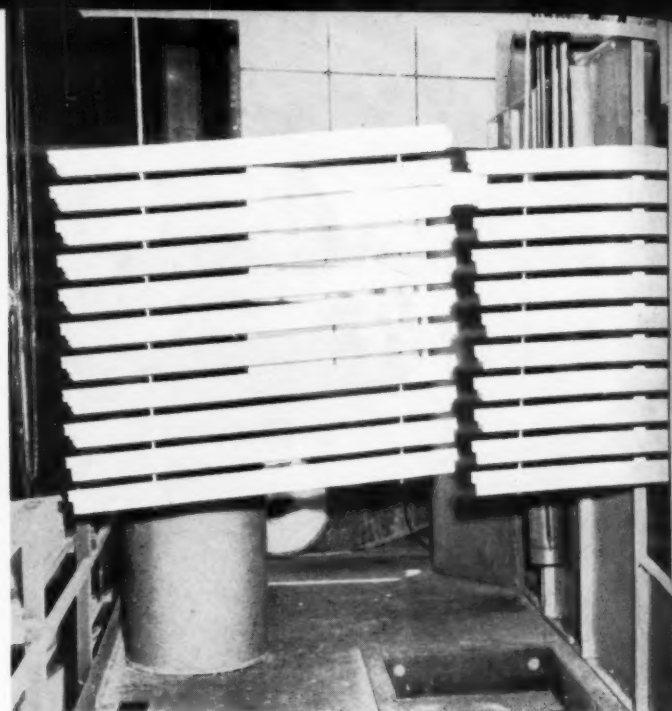
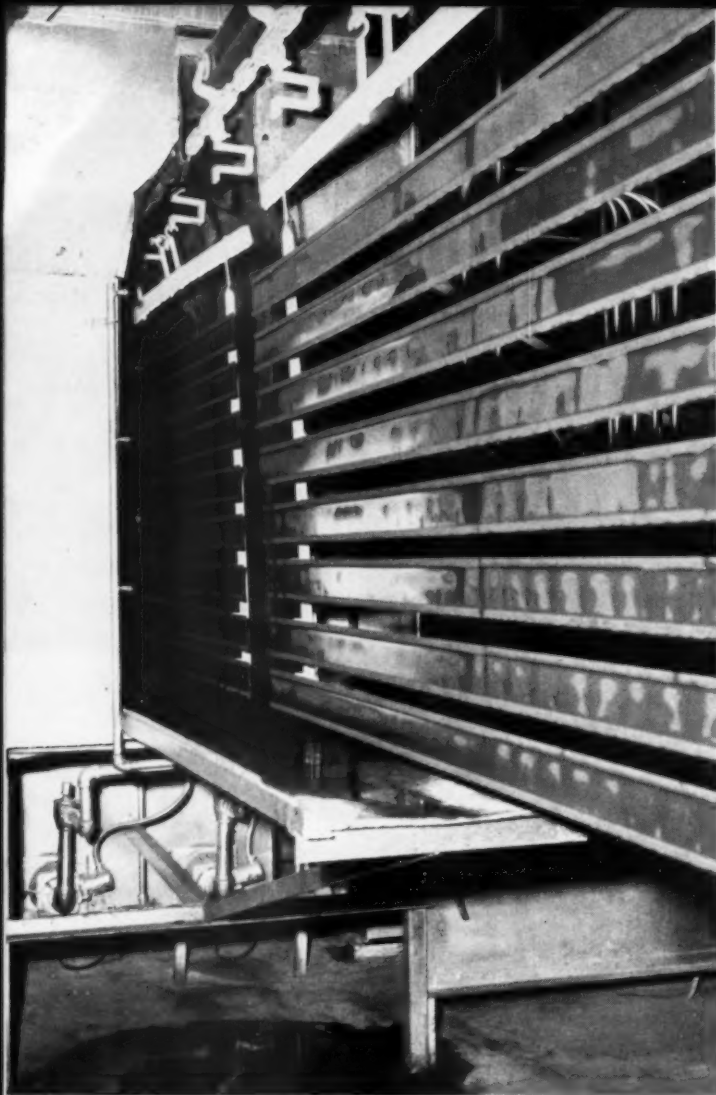
Installation of the new paint facilities was planned to allow for future changes and additions. For instance, eventually the company plans to add additional electrostatic equipment to



Ware goes through the first electrostatic spray booth, where paint is applied to the back surfaces, and then on to the second electrostatic booth where paint is applied to the face of the part.

a complete, new finishing line at Day-Brite Lighting's Tupelo, Mississippi plant includes the latest equipment available for increasing organic finishing capacity





Ware leaving spray booth and moving toward bake oven.

(Left) — Exit end of five-stage washer used for preparation of metal. Parts are dried in gas heated oven.

further increase the capacity of this finishing plant through increased conveyor speeds. Multiplicity of shapes and sizes has been a deterrent to the earlier use of electrostatic applications, but there are indications that the operation is economical. However, about two-thirds of the paint used is still applied manually.

Five-stage zinc phosphatizing

A desire to increase quality led Day-Brite product engineers, in 1952, to install five-stage phosphatizing systems to replace the conventional three-stage systems in all finishing plants of the company. In addition, they changed from iron phosphatizing to zinc phosphatizing. Since then, three installations have been completed.

Production equipment of the organic finishing line at Tupelo is planned to handle parts up to 12 feet in length at a speed of 20 feet per minute. This compares with the outmoded finishing line's capacity for handling parts up to eight feet in length with a maximum line speed of five and one-half feet per minute. The new conveyor line is 1800

ft. long and it takes two hours to make one complete circuit.

Continuous paint stripper for hangers

Another improvement in the new organic finishing line is a continuous cold paint stripper for ware hangers. As the finished parts are removed from the conveyor, the hangers pass through a tank of strip solution. Immediately after emerging from the stripper tank, the hangers pass through a booth where strong jets of air remove any remaining paint from the hangers. In addition to eliminating the handling of hangers that need stripping, as in the old operation, the conveyorized dip method strips hangers of accumulated paint after each cycle instead of after several cycles. Cleaning the hangers after each cycle eases the task of correctly spacing the parts when loading. To achieve greater paint utilization, all the paint hangers used on the conveyor line were redesigned.

An advantage resulting from the new method is that larger diameter wire can be used, thereby contributing greater rigidity while parts are being conveyed.

The clean wire also promotes better electrical contact for electrostatic painting. Company engineers claim longer hanger life and more positive hanging dimensions.

Completed, fabricated parts are hung by hand on the conveyor, which carries them through the entire organic finishing line and on to the assembly area.

The zinc phosphate chemical pre-paint treatment process as used at Day-Brite is the same as the type used by the automotive industry and the treatment specified for steel for ordnance and military use. The process is a power spray system where the first stage is alkali clean, followed by water rinse, zinc phosphate treatment, water rinse, and chromic acid rinse. The parts are then dried in a gas heated oven at 350-400° F. and are conveyed to an upper floor to be painted.

Electrostatic spray

The parts that are to be painted electrostatically pass through four booths. Areas that are difficult to cover electrostatically are reinforced in hand spray booths following electrostatic application. The conveyorized clean ware goes through the first electrostatic spray booth, where paint is sprayed on the back surfaces, and then on to the second electrostatic spray booth where paint is applied to the face. Parts are touched up in the two hand spray booths, utilizing the latest types of hand spray guns.

All paint is heated

All of the paint is heated, regardless of whether it is to be used for hand spray or for electrostatic application. Constant re-circulation, while the finishing operation is running, keeps it heated to the proper temperature. The paint must be heated to 180° F., if the material is to reach the gun at the required 140° F. Heated paint is not a new practice at this plant, as it has been used since 1948 when the company operators first realized its advantages.

The type of paint used is an alkyd base enamel with carefully controlled reflectance value. The paint is formulated so that the coating combines sufficient hardness to resist scuffing with a high degree of flexibility to resist chipping. Parts are baked at 250° F. for twenty minutes.

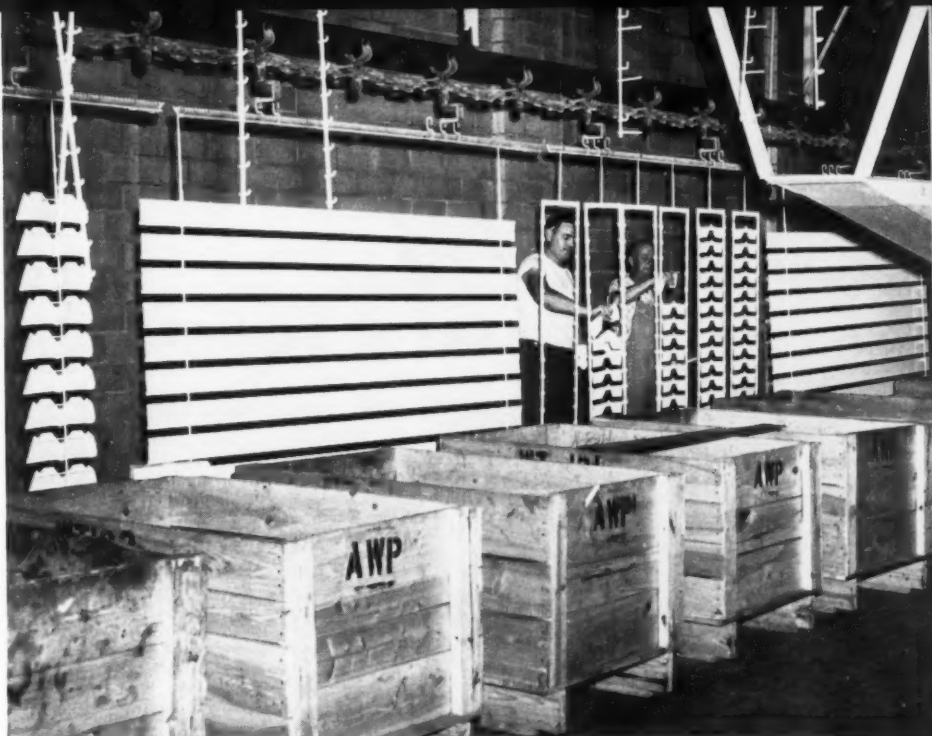
Reclaim all paint

Only white paint will be applied in the new system. This permits the reclaiming of all overspray from the water wash booths without contamination by colors. The sludge, which is collected frequently from the booth tanks, is returned to the paint supplier, who reconstitutes it into usable paint. Day-Brite engineers say that salt spray and reflectance tests show the performance qualities of the reclaim equal to those of virgin paint, at a worthwhile cost saving. It is used for the base coats.

Parts are painted on a scheduled basis, minimizing the hazards of dirt accumulation, and scratching of finished surfaces.

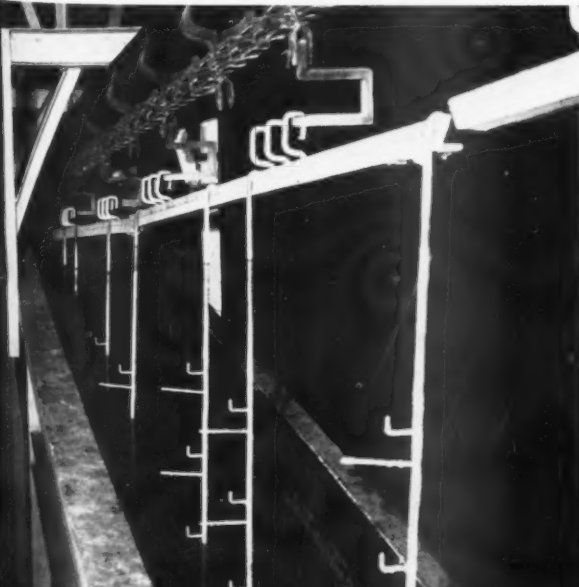
Frequent performance quality checks are made for reflectance, hardness, and salt spray corrosion resistance, both under Day-Brite's quality control procedures and by the suppliers of phosphating and paint materials.

Hangers dip down into cold paint stripper. Jets of air remove remaining paint.



Unloading point. Line is 1800 feet long, and makes complete circuit in two hours.

Parts are touched up by hand in two hand spray booths, utilizing latest type of equipment. Paint is sprayed at 140° F.



NEW

SUPPLIES & EQUIPMENT

Multi-Purpose Cutting Tool

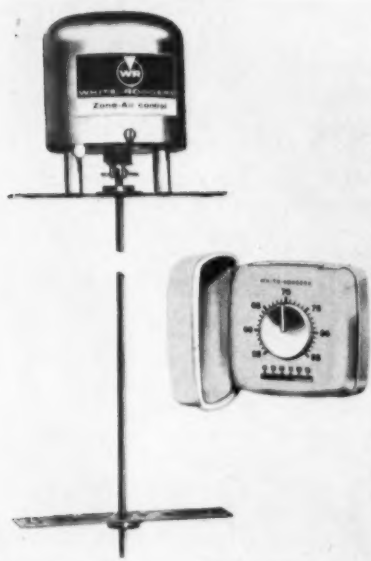
Introduction to the American market of a multi-purpose cutting tool, developed by German engineers, has been announced. This speed shear is claimed to cut any shape or pattern, including tubular work, without distortion or straightening.

Used for cutting of light metal up to 1/4 inch thick, it can be attached to any make of electric



hand-drill or motive power unit which transmits through a chuck, including flexible drives and high-speed drilling machines. For further information, contact Dept. MPM, Malden Research & Development Co., 1130 Main St., Malden, Mass.

Controls Package



A combination control package for zoning forced-air, heating-cooling systems has been announced. Consisting of a low voltage thermostat and a silent automatic damper motor, the package offers economical installation by use of simplified components and low-voltage wiring.

Where required, a damper is available to stabilize air velocities in relation to the number of zones in operation. For further information, contact Dept. MPM, White-Rodgers Co., 1209 Cass Ave., St. Louis 6, Mo.

Protective Coating

Development of a solvent or alkali removable coating for in-shop protection of metallic and non-metallic surfaces during storage, forming, and fabricating operations has been announced. The new product is said to offer the protection available only by use of zinc chromate primer, without the difficulties of removal.

The coating is claimed to repel moisture and protect surfaces from corrosion and scratches, while not interfering with the tools used in fabrication. For further information, write Dept. MPM, Turco Products, Inc., 6135 S. Central Ave., Los Angeles 1, Calif.

Temperature Sensing Device

A sensing device for electric range top burner temperature control has been developed. The unit consists of a sensing head, which also serves as a reservoir for the fluid charge, connected by a capillary tube to a diaphragm assembly which provides the motion necessary to adjust current flow and control burner temperature.

For further information, contact Dept. MPM, Flexonics Corp., 1315 S. Third Ave., Maywood, Ill.

Motor Driven Agitator

Announcement of a motor driven agitator that is explosion-proof has been made. According to the manufacturer, it cannot be damaged by overloading or stalling. Stainless steel shafts and propellers are standard, with a variety of special stands and clamps available.

For further information, contact Dept. MPM, Spraymation, Inc., 25 Amity St., Little Falls, N.J.

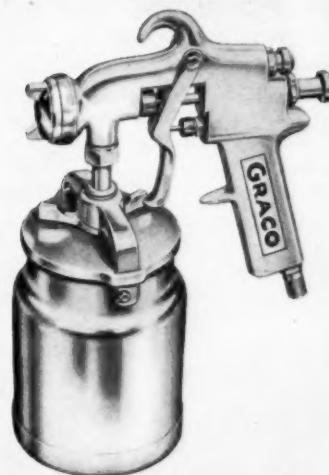
Giant Die Caster For Extremely Large Castings

A 200-ton die casting machine is designed for the production of extremely large castings such as automobile door frames, motor blocks, and large housings. Aluminum castings weighing up to 85 pounds can also be cast.

The die toggle mechanism, plus extra heavy platens and tie rods, are said to withstand extreme injection pressures and provide maximum

Cup-Type Spray Gun

A lightweight cup gun for spraying paints, enamels, and lacquers has been announced. It features a two-piece, aluminum alloy body with

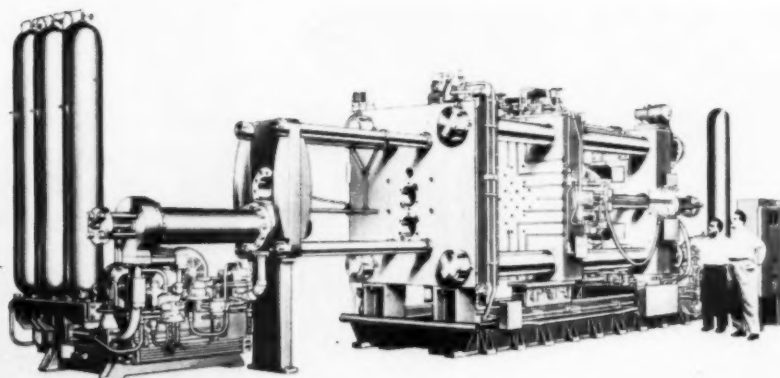


a built-in air distributor. The gun has been engineered so no gaskets are required in tip or cap assembly. It is claimed this eliminates any chance for leaking, and simplifies cleaning.

For further information, contact Dept. MPM, Gray Co., Inc., 1032 Sibley St., N.E., Minneapolis 13, Minn.

New Design For V-Belts

A completely new V-belt is said to incorporate a major design change in multiple V-belts. According to the manufacturer, the V-belts have the ability to transmit more horsepower in a given area at less cost and with fewer belts. It features increased sidewall area which, together with a domed top, frees the entire sidewall for power transmission purposes. For further information, contact Dept. MPM, Durkee-Atwood Co., Minneapolis, Minn.



Synthetic Latex Paint

A modern synthetic latex paint for both exterior and interior application has been developed. The emulsion product is said to require no acid etching, be easy to apply, and dry in less than an hour. The paint is also said to possess excellent alkali, moisture, and abrasion resistance. For further information, contact Dept. MPM, Pittsburgh Plate Glass Co., 632 Fort Duquesne Blvd., Pittsburgh 22, Pa.

Masking Discs

Overlapping masking discs have been introduced which are said to greatly simplify masking for spray painting. The discs overlap on the rolled release liner. When several discs of the same size are required, they may be removed from the roll in connected strings and applied to the part without lost motion.

The masks are claimed to have high heat resistance and good adhesive qualities. They are available in sizes from $\frac{1}{8}$ " in diameter and increase in increments of $\frac{1}{16}$ ". For further information, contact Dept. MPM, By-Buk Co., 4314 W. Pico Blvd., Los Angeles 19, Calif.

Electronic Shear Line

An automatic, electronic shear line has been developed that is said to combine high production, simplicity of operation, compactness, and operation by pushbutton, IBM card, or punch tape.

The shear line is said to handle coiled metal in any width and most thicknesses. Initial designs of the line obtain production speeds of about 200 feet per minute cutting length of four feet and over. For further information, contact Dept. MPM, McKay Machine Co., 825 W. Federal St., Youngstown 1, Ohio.

Liquid Additive Prevents Spotting

A liquid additive to hot water rinses which prevents spotting and subsequent corrosion of all metals has been developed. The new product, it is claimed, causes rinse water to shed rapidly from the metal surface, resulting in faster drying and elimination of "water spots" and stains. It also leaves a strongly-absorbed, invisible film on the metal surface, protecting the metal from tarnish and corrosion.

For further information, contact Dept. MPM, Enthone, Inc., New Haven, Conn.

High Metallic Enamel

An alkyd baking enamel with high metallic content is said to enable users to achieve a broad range of glamorous color effects with a large degree of brightness, depth, and beauty. Exposure tests are claimed to have proven that gloss retention is exceptionally high, with the added advantage of resistance to mildew in humid climates.

The baking enamel can be utilized on such products as outboard motors, metal furniture, and household and commercial appliances. For further information, contact Dept. MPM, Rinsed-Mason Co., Detroit 10, Mich.

Wet-Blast Machine

An automatic wet-blast machine for the removal of light flash and burrs from die-cast nameplates and similar parts has been placed in operation. It features stainless steel construction, with no pumps or moving parts in its blast circuit.

Said to eliminate tedious manual operations, the machine incorporates a complete process cycle, including automatic unload and oxidation-inhibition in its final stage. For further information, contact Dept. MPM, Hydra-Blast Mfg. Div., Automation Services, Inc., Box 5554, Detroit 38, Mich.

Vapor Spray Degreasers

A new series of five standard vapor spray degreasers has been announced. Said to be inexpensive, the degreasers utilize a trichlorethylene vapor solution to dissolve greases, oils, and waxes from all ferrous and non-ferrous metals.

The small model weighs as little as 400 pounds, work load capacity is said to range from 1,600 to 2,000 pounds. For further information, contact Dept. MPM, Baron Industries, 241 West Avenue 26, Los Angeles 31, Calif.

Pre-Assembled Nuts & Washers

Two new types of pre-assembled nuts and washers have been announced. They are plain dish washer assemblies and conical washer assemblies, and are recommended for spanning bolt holes and distributing the fastener load around and away from the hole. The new types are available with various washer sizes.

For further information, contact Dept. MPM, Shakeproof Div., Illinois Tool Works, St. Charles Rd., Elgin, Ill.

Aluminum Fabrication Technique

A metalworking technique that is capable of fabricating such complex parts as faucet handles and the hub and spokes of a steering wheel is available to users of fabricated aluminum parts. Called "lateral impact extrusion," the technique is a modification of the impact process.

For further information, contact Dept. MPM, Aluminum Co. Of America, 1501 Alcoa Bldg., Pittsburgh 19, Pa.

Plastic Deflection Tester

A plastic deflection tester that indicates the deflection of thermoplastics when subjected to various loads and temperatures has been announced. As many as four samples can be tested simultaneously by placing each in a specimen



holder and lowering the holders into an insulated bath. Deflections are indicated on dials mounted on the specimen holders.

The instrument is 26 x 16½ x 23 inches high and has handles attached on either side of the tester so that the unit may be easily moved. For further information, contact Dept. MPM, American Instrument Co., Inc., 8030 Georgia Ave., Silver Spring, Md.

Stencil Tabbing Machine

A machine for tabbing shipping stencils on continuous forms has been announced. It is designed to place shipment addressing stencils on a form automatically at an adjustable speed of up to 2,400 per hour. The machine also counts the forms as they are tabbed.

The machine is said to eliminate the need for manually tabbing stencils on forms. For further information, contact Dept. MPM, Weber Addressing Machine Co., Inc., 215 E. Prospect Ave., Mt. Prospect, Ill.

New Process For Wire Goods



Special welding techniques coupled with modern production line methods are said to effect significant economies in the manufacture of wire specialties, such as this wire freezer basket. The manufacturer also produces refrigerator shelving, oven racks, dishwasher racks, display stands, and condensers.

Facilities for handling wire from $\frac{1}{8}$ inch to 16 gauge, and automatic plating facilities for electro-zinc, copper nickel, and copper nickel chrome are available. Other finishes offered include plastisol and all types of enameling. For further information, contact Dept. MPM, The Collis Co., 2005 S. 19th St., Clinton, Iowa.

Polyethylene Coating

A sprayable, high-density polyethylene coating which can be applied to metals is now available in semi-commercial quantities. The new coating is said to demonstrate excellent continuity and adhesion qualities and have impact resistance and flexibility on metallic surfaces.

Suggested uses include industrial process equipment, tanks, drums, pipe coatings, appliances, and electrical insulation. For further information, contact Dept. MPM, Plastics Div., Koppers Co., Inc., Pittsburgh 19, Pa.

Adjustable Escapement

An automatic escapement for releasing parts fed through chutes can be adjusted to fit changing parts requirements. It is a standardization unit with adjustable release fingers that can be changed to affect a single or group release.

Operation is by either double-acting air cylinder or solenoid. It is said to work on gravity or power-fed chutes at a maximum speed of 120 cycles per minute. For further information, contact Dept. MPM, Syntron Co., 1313 Lexington Ave., Homer City, Pa.

Water-Soluble Coolant

A water-soluble, metalworking coolant that the manufacturer states will stop rusting, resist rancidity, and reduce the threat of dermatitis has been introduced. The product is said to stay clean for weeks even when used on cast iron, since the coolant does not hold dirt in suspension. Surface-active agents are used in the formula to reduce surface tension and bring the solution in close contact with metal surfaces, enabling the product to cool effectively. For further information, write Dept. MPM, Johnson's Wax Co., Racine, Wisc.

Self-Adhesive

A self-adhesive incorporates all of the properties of polyurethane foam plus permanent-type, pressure-sensitive adhesives. It is claimed to be applicable for cushioning, insulating, sound-proofing, and weather-stripping. It can be die-cut, guillotined, or slit on conventional equipment, and is available in thicknesses from $\frac{1}{8}$ " to 1" in rolls or sheets up to 52" wide. For further information, contact Dept. MPM, Fasson Products, 250 Chester St., Painesville, Ohio.



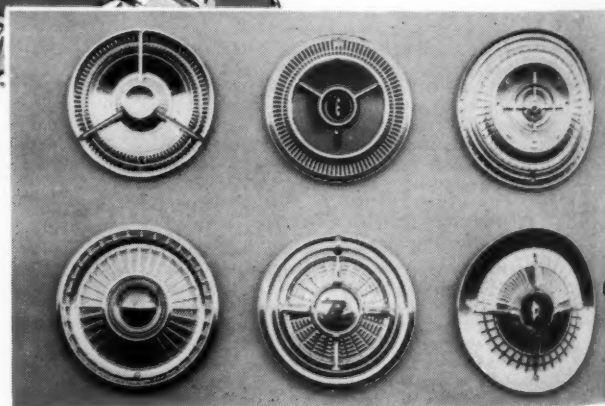
Brightness is Not Enough

Wheel covers must be more than just bright. They must have strength, spring temper, durability and low unit cost in volume production.

Other materials may claim some of these characteristics, but only stainless steel actually possesses all of them — and has a performance record to prove it.

It is easy to make cheaper wheel covers. Just forget that customer complaints, lost goodwill and the inevitable replacement of parts eventually show up on the balance sheet.

In wheel covers there is no substitute for stainless steel's lasting brightness, strength and durability.

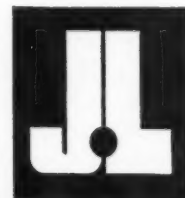


Can you name the cars represented by these stainless steel wheel covers? A postcard request will bring you the answers.



Plants and Service Centers:

Los Angeles • Kenilworth (N. J.) • Youngstown • Louisville (Ohio) • Indianapolis • Detroit



STAINLESS

SHEET • STRIP • BAR • WIRE

Jones & Laughlin Steel Corporation • STAINLESS and STRIP DIVISION • Box 4606, Detroit 34

New Literature

→ from Page 44

being determined by the spindle capacity. Typical speeds and feeds for boring and drilling of aluminum are given in chart form. Both single-spindle and multiple-spindle automatic screw machines are adaptable. Contact Special Projects Editor, METAL PRODUCTS MANUFACTURING, York St. at Park Ave., Elmhurst, Ill.

Water Heater Control

The 200R gas water heater control, with decorative trim available in grey, red, white, blue, black, or aqua, is described in publication GW-23. The new control features a built-in pressure regulator and a slip-off cover which conceals the gas cock and reset push-button. This is said to reduce dust accumulation and discourage tampering. Write Grayson Controls Div., Robertshaw-Fulton Controls Co., Dept. MPM, 100 W. Victoria St., Long Beach 5, Calif.

Heavy-Duty Gearmotor

An electric, heavy-duty gearmotor that is said to provide great power in a small space is described in a leaflet now available. The motor can be obtained at any single speed from 1/2 rpm to 1,000 rpm, with torques up to 1/20 hp.

Gear assemblies are copper brazed and can be either base or panel mounted. The gearmotor operates at 115 V., 60 cycle current, though special cycles and currents are available. Uses include vending machines, business machines, pumps, conveyors, and machine tools.

Write Dept. MPM, New England Gear Works, 557 South End Rd., Southington, Conn.

Aluminum Panels For Appliances

How a unique insulating building panel can aid builders and manufacturers is graphically presented in a 24-page brochure now offered. The panel, which consists of expanded plastic beads "sandwiched" between sheets of aluminum, offers less costly and simplified design in the construction of appliances, buildings, and other applications. Designs, hues, and finishes available on either or both sides of the panels are presented in full color. The booklet includes a special section on technical data and sections devoted to joining and manufacturing standards. A copy may be had by writing Dept. MPM, Aluminum Co. of America, 779 Alcoa Bldg., Pittsburgh 19, Pa.

New Rollforming Equipment

A recently-introduced line of roll forming machines with a number of design innovations is described in a catalog which is available upon request from the manufacturer. The heads of the machines have independent adjustments on both lower and upper spindles. Vertical camber on any pass is said to be easily controlled. The machine can induce camber on the final pass to allow rolling of hoops, etc., without additional equipment. Write Dept. MPM, The Rollform Corp., 4325 W. Lincoln Ave., Milwaukee 19, Wis.

Electric Process Heaters

A 64-page catalog illustrates a complete line of electric process heaters and describes their uses. The line includes over 15,000 types and is said to be the most complete stock of electric process heaters in the world. Included in the catalog is an application section and a technical section to aid in calculation of heating requirements. Each product is illustrated and described with lists of types, sizes, and ratings. Write to Dept. MPM, Edwin L. Wiegand Co., 7500 Thomas Blvd., Pittsburgh 8, Pa.

Tangent Bending Machines

An eight-page catalog lists specifications for single-wing, duplex, and quadruplex tangent bending machines.

These machines are air operated and are used for light duty bending of pre-formed metal sheets. Typical applications include refrigeration components, unit and space heater housings, television and radio cabinets, electrical switch cases, metal furniture components, air conditioning units, and automobile and truck parts.

For a free copy of this catalog, write Dept. MPM, The Taylor-Winfield Corp., 1052 Mahoning Ave., N.W., Warren, Ohio.

Paint Finishing Articles

A 24-page reprint of six articles on factors to consider when planning a paint finishing system is now being offered. The articles cover conveying systems, layout, equipment for metal preparation, ovens, methods of paint application, and auxiliary equipment. Thirty-two illustrations are included, and two line drawings illustrate a typical layout of metal cleaning and preparation. Copies may be obtained from Dept. MPM, J. O. Ross Engineering Div., Midland-Ross Corp., 730 Third Ave., New York 17, N.Y.

Pressure-Sensitive Materials

A brochure listing current uses of pressure-sensitive materials in the design and decorating of products has been released. It contains swatches of available materials, and a full-size nameplate showing the material's claimed ability to be die-cut, printed on, or silk screened. The brochure is available free from Dept. MPM, Decorative Products Div., Avery Label Co., 2123 E. 9th St., Cleveland 15, Ohio.

Metal Processing Service

A complete metal processing service, ranging from the design installation, and service of a variety of metal preparation and finishing machines to the compounds and chemicals themselves, is shown in an eight-page booklet. Equipment in the line runs from small agitating washers and wash-and-rinse cabinets to large phosphatizing machinery, spray coaters, dryers, and other machines. Write to Dept. MPM, Pennsalt Chemicals Corp., 3 Penn Center, Philadelphia 2, Pa.

Electroluminescent Lamps

A new concept of lighting is described in a free illustrated brochure. The process involves conversion of electroluminescent panels into finished parts, thus producing electroluminescent lamps. The lamp is said to last 50,000 hours, or over 12 years, without appreciable dimming. Uses claimed include lighted control panels for heaters, radio and TV sets, advertising and ground equipment, and clock faces. For the brochure, contact Dept. MPM, Miller Dial & Name Plate Co., 4400 N. Temple City Blvd., El Monte, Calif.

Fastener Inventory Guide

A handy eight-page guide outlines the packaged items, sizes, and finishes regularly carried in gross shelf stock of fasteners. Categorized in chart form, the list includes such items as carriage bolts, machine screws, stove bolts, and tapping screws. A variety of metals, including steel, brass, and aluminum, is available for most of the fasteners. Copies of the guide can be had by writing to Dept. MPM, Southern Screw Co., P.O. Box 1360, Statesville, N.C.

Special Coated Valves

An eight-page, illustrated bulletin describes special coated, lubricated plug valves. Descriptions of the coating properties, valves available, tables of recommended applications, and photos showing typical installations are in-

cluded in the bulletin. For a copy, write Dept. MPM, Rockwell Mfg. Co., Meter & Valve Div., 400 N. Lexington Ave., Pittsburgh 8, Pa.

Gas Valve Folder

Titled, "For Perfection in an Absolutely Silent Gas Valve," this six-page folder describes an entire line of gas valves, listing valves available, and describing the type of job each is designed to accomplish. The color folder gives general specifications, including electrical ratings and sizes available. Copies can be had from Dept. MPM, White-Rodgers Co., 1209 Cass Ave., St. Louis 6, Mo.

Metal Finishing Cost Guide

An informative cost guide is now available to manufacturers of products fully or partially fabricated from metal. It is designed for determining and comparing costs involved in metals finishing procedures for on-premises finishing of parts, off-premises finishing of parts, and use of pre-finished metals. Comparative figures are confined to the individual operation or sequence of operations for which the guide is used. A free copy of "Metal Parts Finishing Cost Guide" may be obtained from Dept. MP-3, Apollo Metal Works, 66th Place & S. Oak Park Ave., Chicago 38, Ill.

Booklet On Perforated Metals

A booklet entitled "Perforated Metals For Every Purpose" is offered by a specialist in perforated metal design and production. The designer offers 89 years of experience on both large and small jobs. To obtain the booklet, write to Dept. MPM, Charles Mundt & Sons, 55 Fairmont Ave., Jersey City 4, N.J.

Three Controls Bulletins

Three bulletins are offered by this manufacturer of controls. Bulletin 275 covers the S-25 solenoid valve, which gives positive opening and closing from $\frac{1}{4}$ to 6 gpm, $2\frac{1}{2}$ to 200 psi, and at a temperature of up to 180° F. The valve has an optional flow control device built into the outlet. It is available with pipe, tubing, or hose connections and with a wide variety of terminals.

Bulletins 263 and 270 describe miniature snap switches that are said to be virtually bounceless, resisting shock and vibration. Class 1 switches (Bulletin 263) are top mounted and top actuated; class 4 switches (Bulletin 270) are side mounted and top actuated. Both have a wide variety of actuators and terminals. Applications are given in the bulletin,

which can be obtained from Dept. MPM, Detroit Controls Div., American-Standard, 5900 Trumbull Ave., Detroit 8, Michigan.

Fractional Horsepower Motors

A catalog sheet presents fractional hp, ac motors designed to meet a wide variety of applications. The motors are said to have self-aligning, self-lubricating bronze bearings, baked, varnish-impregnated windings, and an ample oil reservoir located for easy lubrication. They come in sizes from 1/1800 to 1/35 hp. The catalog may be had by writing Dept. MPM, General Industries, Elyria, Ohio.

Phosphating At 95° F.

Details on a low temperature phosphating process as well as a phosphating reference chart is available free of charge. The process is said to provide permanent paint adhesion when used at a temperature of 95° F., some 75° lower than temperatures required by other phosphating processes. As a base for paint, the process provides a coating of up to 200 mg/sq. ft. in two minutes. As a base for corrosion prevention, it provides an 1100 mg/sq. ft. coating in eight minutes. A description of the process plus the chart can be obtained by writing to Dept. MPM, Turco Products, Inc., 6135 Central Ave., Los Angeles 1, Calif.

Miniature Solenoids Catalog

Miniature solenoids are described in a new catalog now available. The solenoids have pull capacities of up to five pounds, strokes to $\frac{1}{2}$ inch, and double shading coils. Applications include washing machines, vending machines, business machines, and automatic slide projectors. Write to Dept. MPM, Dormeyer Industries, 3436 Milwaukee Ave., Chicago 41, Ill.

Shipping Containers

A free illustrated catalog describing a complete line of shipping containers and services is now offered. Pallet boxes, cleated boxes, cleated and corrugated boxes, wirebound boxes and crates, and hinged corner crates and boxes are all shown in the catalog. For a copy, write to Dept. MPM, Chicago Mill & Lumber Co., 33 S. Clark St., Chicago 3, Ill.

Induction Heating Units

High frequency, induction heating units are shown in a new catalog now available. Featured in the catalog is Model HCP, a floating zone fixture for the production of ultra-high purity

metals and semi-conductor materials. Purification or crystal growing is achieved by traversing a narrow molten zone along the length of the process bar while it is being supported vertically in vacuum or inert gas. The model is primarily designed for production purposes but can also be used for laboratory studies. Write to Dept. MPM, Lepel High Frequency Laboratories, Inc., 55th St. and 37th Ave., Woodside 77, N.Y.

Cycle-Set Power Timer

The cycle-set power timer described in a free bulletin is claimed to incorporate high design flexibility. Any number of cycles, any switch arrangement, and any console styling are adaptable to the timer. Uses include dishwashers, vending machines, and industrial process controls. To obtain the bulletin, write to Dept. MPM, Controls Co. Of America, 9559 Soreng Ave., Schiller Park, Ill.

Non-Flaking Steel Sheets

Steel sheets that are said to resist flaking under the toughest treatment, including deep-drawing, spin-drawing, lock-seaming, crimping, or punching, are described in a free booklet which contains technical data plus complete information on the sheets. The steel is produced with either dry, oiled, or chemically treated surfaces in sheet and coil form and in a variety of gages and widths. For a copy of the booklet, write Dept. MPM, Inland Steel Co., 30 W. Monroe St., Chicago 3, Ill.

Supplies and Equipment

Porcelain enameling supplies and equipment is the subject of a catalog describing everything from agitating storage tanks to wool dusters. Necessary items such as spray booths, enamel storage tanks, circulating dip tanks, pickle baskets and hoists, and jar mills and jar mill racks are available. To obtain a copy of the catalog, write to Dept. MPM, Chicago Vitreous Corp., 1425 S. 55th Court, Cicero 50, Ill.

Miniature Indicator Lights

An eight-page, two-color brochure on miniature indicator lights for use in data-processing equipment, computers, and automation application is available. Also described are lights with female receptacles for amp "53" series taper-pin terminals. These offer the convenience of plug-in lamp cartridges. Copies of the brochure may be had by writing Dept. MPM, Dialight Corp., 60 Stewart Ave., Brooklyn 37, N.Y.



JACK-HAMMER FAILS TO FLAKE INLAND TI-CO®

Crumbling concrete is easy with this powerful paving breaker. It hits with crunching impact at the rate of 1,200 blows per minute with 75,000 ft. lbs. of developed energy. Yet, while thousands of repeated blows actually hammered this TI-CO galvanized sheet into the ground at the point of contact, there wasn't a trace of flaking of the zinc coating!

More proof that you can subject TI-CO sheets to deep-drawing, spin-drawing, punching, crimping, perforating, Pittsburgh lock-seaming or any other tough fabricating process, and you won't flake TI-CO!

That's why Inland TI-CO galvanized sheets are now being used in scores of new applications and products. TI-CO is available in cut sheets or coils in gages 8 to 30 inclusive and widths as great as 60 inches. You can get it with dry, oiled or chemically treated surfaces to meet your production needs. A free, informative booklet will be sent you upon request. For your galvanized sheet requirements, consult your Inland representative.



Hammer operator runs finger around depression made in TI-CO sheet. Although hammered area resembles a shot-peened finish, the zinc coating has not flaked



INLAND STEEL COMPANY

30 West Monroe Street • Chicago 3, Illinois

Sales Offices: Chicago • Davenport • Detroit
Houston • Indianapolis • Kansas City • Milwaukee • New York • St. Louis • St. Paul



Photograph by famous underwater hunter-photographer Jim Thorne

DEEP SEA HUNTER FAILS TO FLAKE INLAND TI-CO®

More than a match for ferocious 700-pound hammerhead sharks, this compressed-air powered gun fires underwater spears with terrific force. Again and again its high-speed missiles pierced this Inland TI-CO galvanized sheet, yet at the edges around the holes there wasn't a trace of flaking of the zinc coating.

Yes, you can perforate TI-CO sheets. You can subject them to deep-drawing, spin-drawing, punching, crimping, Pittsburgh lock-seaming, in fact the toughest fabricating processes—but you won't flake TI-CO!

No wonder TI-CO galvanized sheets are top-choice with manufacturers in such a wide variety of new applications and products. TI-CO is manufactured with dry, oiled or chemically treated surfaces to meet your production needs. It comes in sheets or coils in gages 8 to 30 inclusive and in widths as great as 60 inches. Specifications, application and performance data, complete information, is all contained in a free TI-CO booklet we'll be glad to send at your request. For your galvanized sheet or coils requirements, consult your Inland representative.



Close-up inspection shows no flaking of TI-CO's zinc coating



INLAND STEEL COMPANY

30 West Monroe Street • Chicago 3, Illinois
Sales Offices: Chicago • Davenport • Detroit • Houston • Indianapolis • Kansas City • Milwaukee • New York • St. Louis • St. Paul



Slammin' Sam Snead fails to flake Inland TI-CO®

As one of golf's great players, Slammin' Sam earned his name and fame with a driving power that has seldom been equalled. His swing is deceptively easy—yet it drives the ball with astounding force and speed. At Boca Raton, Sam drove ball after ball into an Inland TI-CO galvanized sheet. Each impact was terrific. One would expect such punishment to be devastating, yet, though the TI-CO sheet was

battered and dented—*there was no flaking of the zinc coating whatsoever!*

All year 'round in product fabrication and assembly; in a limitless variety of commercial and residential applications; Inland TI-CO regularly takes equally tough treatment—deep-drawing, spinning, Pittsburgh lock-seaming, crimping, punching, hammering—*without cracking, peeling or flaking!*



Sam couldn't believe it either 'til he examined the TI-CO sheet for himself. *Not a trace of flaking!*

Consult your Inland Representative regarding your galvanized sheet or coil requirements. And send for your free TI-CO booklet containing technical data and complete information. TI-CO is produced with dry, oiled or chemically treated surfaces in sheet and coil form in a wide variety of gages and widths.



INLAND STEEL COMPANY

30 West Monroe Street • Chicago 3, Illinois

Sales Offices: Chicago • Davenport • Detroit • Houston
Indianapolis • Kansas City • Milwaukee • New York
St. Louis • St. Paul

Appliance conference

→ from Page 29

Temperature: Above 350° F., lamp life will be reduced. A 7-watt night light will last only 300 hours at 500° F., yet has a rating of 3000 hours at normal temperature. Base materials and solder will soften at the higher temperature.

High temperature service lamps with special basing cements will give good operation up to 550° atmosphere. Standard "soft glass" will soften at 750° F.; "hard glass" lamps will stand heat to 850° F.

It is a mistake to put lamps close to plastic pieces to get decorative effects. There is infra-red heat in all lamps. Some plastics should be kept below 140-150° F. Some back splashers gain temperatures around lamp of 200° F., because of design and lack of ventilation. **Moisture:** As might be expected, the most severe conditions are found in automatic washers, according to Stephens.

Splashing water may result in cracked lamps. Vacuum-filled lamps are cooler in operation than gas-filled. The hottest spot on a lamp is at the top surface, whether it is installed vertically or horizontally.

J. W. Tuttle and H. G. Schiller, of the GE organization, supplemented Stephens' presentation with demonstrations of electro-luminescent lighting and school lighting. Tuttle showed how electro-luminescence converts electricity directly to light, unlike conventional lamps. It may be on metal (painted on metal), on glass or applied in a plastic envelope laminated between sheets. It seems ideally suited to indicator and switch lighting, as well as for styling of appliances.

Neon glow lights increase possibilities, as they are eight to twenty times brighter than former glo-lamps. They are under 1/4-watt and have 5000 hours minimum life.

Schiller demonstrated that old school lighting with enclosed globes had as low as ten foot-candles. This could be possibly increased to twenty foot-candles with larger lamps, but would cause glare and too much brightness.

Complete, indirect lighting from the ceiling gives better quality illumination, and reduces shadows and glare. Higher wattage is, of course, required. A recommended minimum level for schools is 35 foot candles.

With fluorescent lights, bare lamps are not desirable in any form or brightness. Fluorescent at 60 foot-candles gives greater efficiency. A new method of assembly in four by eight foot sections, which can be "floated" from the ceiling, was shown as an answer to easy installation.

Electrical controls

for gas-burning appliances

James Wright, White-Rodgers Co., illustrated the evolution of a gas burner

control system. Early illustrations in his presentation were of steps in the evolution, and reasons were given why the early controls were not used.

Following this, illustrations were presented showing usable systems, including what was represented as the most economical and best for manual control, and the best for solenoid control.

(In a later issue, MPM will show a new type of burner system which is not yet in use.)

An automatic meat probe control

C. J. Holtkamp, Westinghouse Electric Corp., showed an automatic meat probe control on which Westinghouse is said to have a one-year exclusive from the manufacturer, King-Seeley Corp.

In studying the requirements for an automatic meat probe control, Holtkamp said that Westinghouse felt that the following were needed: (1) a simple device; (2) a unit that would indicate as well as control; (3) it should work for all meats; (4) it should turn down oven and give visible or audible signal; and (5) it should maintain the degree of "doneness" after it has reached the correct degree of cooking.

The new unit is designed so that the housewife can come back to the range four hours late (with a four-hour roast) and the meat will still be cooked properly in accordance with the original setting of the control (rare, medium, etc.).

Holtkamp claimed that with the new method of control, there is less shrinkage by as much as 20 per cent of the roast, and that it also increases the rare area on a roast by 100 per cent.

Automatic oven range timer

W. R. Buechler, General Electric Co., showed details of an automatic oven range timer, which he said covers the earlier objections which the housewife has had to range timer equipment. They were formerly too complicated, he said, and the housewife refused to use them.

Buechler outlined a three-point need: (1) simplicity (it should be easy to understand and to use, and should be easy to assemble); (2) reliability; and (3) service.

It was pointed out that on the new type of timer, there is no need for the housewife to remember a sequence of operations, since (1) the hands can be set in either direction; (2) the start time can be set first, or the stop time can be set first, whichever is desired; and (3) after setting, either start time or stop time may be changed without affecting the other.

Motors for appliances

During the second day's session, a series of interesting papers covered important questions pertaining to the motors used for operating home appliances.

A. P. White, Metals and Controls

to Page 60 →

INDUSTRY MEETINGS

HOUSEWARES

National Housewares Manufacturers Association's 31st National Housewares Exhibit, Convention Hall, Atlantic City, N. J., July 13-17, 1959.

ENAMELERS

Eastern Enamelers Club Outing, Hunsicker's Grove near Allentown, Pa., August 8, 1959.

CHEMISTRY

Physical Chemistry Subject Division Symposium, McMaster University, Hamilton, Ontario, Can., August 30-September 1, 1959.

INSTRUMENT SOCIETY

The 14th Annual Conference & Exhibit of the Instrument Society of America, Amphitheatre, Chicago, Ill., September 20-25, 1959.

PORCELAIN ENAMEL

Porcelain Enamel Institute's Annual Meeting, The Greenbrier, White Sulphur Springs, W. Va., September 24-26, 1959.

WELDING

The American Welding Society's Fall Meeting, Sheraton-Cadillac Hotel, Detroit, Mich., September 28-October 1, 1959.

VACUUM TECHNOLOGY

The 6th National Symposium on Vacuum Technology of the American Vacuum Society, Sheraton Hotel, Philadelphia, Pa., October 7-9, 1959.

BUSINESS SHOW

The 51st National Business Show, New York Coliseum, New York City, N. Y., October 19-23, 1959.

PAINT INDUSTRY

The 37th Annual Meeting & The 24th Paint Industries Show of The Federation of Paint and Varnish Production Clubs, Lower Level, Convention Hall, Atlantic City, N. J., October 20-24, 1959.

AUTOMATIC MERCHANDISING

National Automatic Merchandising Association's Convention-Exhibit, Conrad Hilton Hotel & Navy Pier, Chicago, Ill., October 31-November 3, 1959.

AIR CONDITIONING

The 11th Exposition of the Air Conditioning and Refrigeration Industry, Convention Hall, Atlantic City, N. J., November 2-5, 1959.

METALLURGY

The Metallurgical Society of the American Institute of Mining, Metallurgical, and Petroleum Engineers' Fall Meeting, Morrison Hotel, Chicago, Ill., November 2-5, 1959.

METALS

The 41st National Metal Exposition & Congress, International Amphitheatre, Chicago, Ill., November 2-6, 1959.

PEI FORUM

The Porcelain Enamel Institute's Shop Practice Forum, The Ohio State University, Columbus, Ohio, November 4-6, 1959.

12 YEARS LATER— STILL NO PAINTING NEEDED!

This picture was taken May, 1959, 12 years after this building was sided with Aluminum Siding finished with one coat of Interchemical's POLYMERIN baked enamel.



This close-up photograph of the same building reveals *no damage*. The finish is in *excellent condition*!

Twelve years of sun, snow, wind, rain and industrial smog have failed to mar the beauty of this building, located just blocks from Lake Erie!

This is no accident. POLYMERIN Aluminum Siding Enamels are carefully engineered to last. Either white or the many beautiful pastel shades have excellent color retention—do not chip or peel! When time finally takes its toll by slow erosion, the surface is easily repaintable. No need for paint removers or burning off the old finish.

POLYMERIN enamels are applied by roller coat on continuous aluminum strip and baked for 1 minute at 400°F to 500°F. The strip is subsequently sheared and fabricated, a process which calls for excellent adhesion and flexibility.

If YOUR product must withstand long term outdoor exposure, finish it with POLYMERIN Speed-Bake Enamels.

 **Interchemical**
CORPORATION
Finishes Division

Headquarters Office: 224 McWhorter St., Newark 5, N.J. Factories: Chicago, Ill. • Cincinnati, Ohio • Elizabeth, N.J. • Los Angeles, Cal. • Newark, N. J. • Mexico City, Mex. In Canada, this product is made by Aulcraft Paints Limited, Toronto, Ontario, and sold under its trademark. *Polymerin* is a registered trademark of Interchemical Corporation.

Appliance conference

→ from Page 58

Corp., presented a paper entitled, "Why protected motors can burn out." He presented an interesting outline of the characteristics of overheating situations in the use of electric motors and covered the design of protective control equipment.

Don Mohrman, General Electric Co., presented a paper by L. J. Dogger, Whirlpool, and Mohrman, entitled "Motor insulation system evaluation for laundry equipment." This paper covered a very thorough series of tests for the motor components, as well as the completed motor. Both immersion tests and splash tests were included.

A. G. Ostrognai, General Electric Co., presented a paper, "Standardization of motor components," in which he illustrated standardization by showing how it was done for the motor components of a vacuum polisher.

The chairman of the AIEE Subcommittee on Domestic Appliances, which sponsored the 10th Annual Appliance Technical Conference, is M. A. Fuller, Whirlpool Corp., St. Joseph, Mich. The general chairman of the local operating committee for this year's meeting was E. G. Merrick, General Electric Co., Cleveland, Ohio.

IAAM convention

→ from Page 35

The service problem

In referring to "the wishes of women about appliance service," Margaret Davidson said that while modern machines women buy for their homes increasingly offer advantages, they also include several paradoxes.

"The biggest paradox of all," she said, "is that these very freedom-giving appliances take on the proportions of a Frankenstein—an unpredictable monster that needs to be pampered and cajoled to perform." When it comes to service, Miss Davidson feels that women are apt to have their own ideas or definitions for the word. For instance, to many homemakers, the word service implies performance. Good service means good results. She feels that women don't separate problems of design and manufacture from maintenance—they are all lumped together.

Miss Davidson cited some of the results of a personal survey conducted by Journal editors. This survey showed that the vast majority of the owners of appliances did not have serious service problems. For example, service difficulties bothered only 7 per cent of the range users, 13 per cent of the refrigerator users, 19 per cent of the washer users, and 16 per cent of the dryer users contacted.

The group is small proportionately," she said, "but it is an articulate one. . . ." She went on to say that while the service problem may be a minority one, it assumes big dimensions, and the way service is handled influences in a great measure what customers think about products—and eventually what they buy. The speaker closed her presentation with seven specific suggestions for appliance manufacturers:

1. *Design with the customer in mind.* It is time for honesty to sort out the difference between sales and use value features—they are not always the same.
2. *Make appliances that can be abused.* Customers are grateful for devices that have some tolerance and will take a minor amount of abuse. Part of this same thought is the choice of quality materials.
3. *Put service men in key positions.* Every new design or model being considered should have an okay from the service department.
4. *Encourage informed selling.* A surprising share of appliance service problems are traced to buying the wrong model to fit the need.
5. *Build in instructions permanently.* One answer is to simplify instructions and attach them permanently and conspicuously to the product. *Question:* Is there some way of providing a planned place for complete instructions in or on or behind the appliance?
6. *Explain the service setup.* Before the sale is completed explain what can be expected, and what constitutes fair rates and fees and the basis for any warranty or guarantee.
7. *Put into operation a good service program.* Homemakers who buy the appliances expect to find prompt and courteous answers to calls for help in every locality where products are sold.

Three way responsibility

In his discussion of the service problem, Robert Lewis outlined the three levels of responsibility for service as (1) the manufacturer, (2) the distribution level and (3) the homemaker or user of the appliance.

In pointing up the importance of service in dollars, Lewis said, "The industry, presently, is selling from 20 to 25 million major appliances each year. There are nearly 200 million major appliances in use in American homes at this time. The annual industry sales represent about \$6 billion at retail prices and to keep these products going it is estimated that the servicing industry itself, covering all lines, not just major appliances, develops an annual income in excess of \$16 billion each year. . . ."

"Even though our lovely housewife has a good bargain in her mechanical servants," said Lewis, "I would say that not only for the sake of the manufacturer and his chain of distribution, must the service on these appliances be good, but the future of the entire industry might well be at stake, should users generally become disillusioned as a result of excessive, incompetent and expensive service."

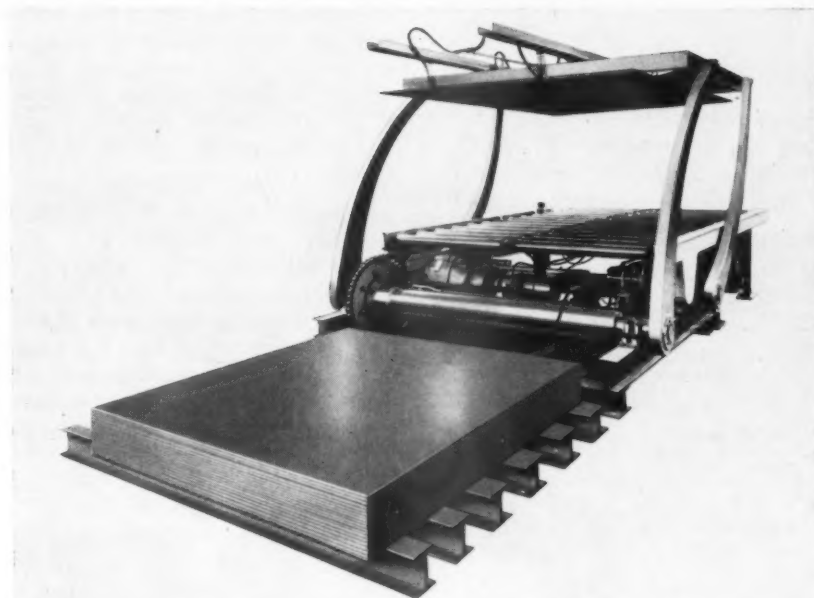
"And," he continued, "the manufacturer who can furnish a product which is not only functionally and aesthetically superior, but also durable and readily serviceable, will certainly dominate the home appliance market. . . ."

Lewis mentioned six specific phases of the manufacturing operation which are related to the service problem: (1) the approach toward new features and added complexity of products is being made with a great deal more care than it was as short a time as two years ago. (2) Manufacturers are spending more time testing the new features being introduced. (3) The major appliance manufacturers are now well equipped with engineering laboratories which can simulate most use conditions. (4) Customer Acceptance Laboratories and Extended Life Laboratories tests of the finished product have been extended. (5) A number of manufacturers are analyzing all service calls from sampling areas. (6) Major appliance manufacturers have instituted surveillance and evaluation programs on products entering the field.

It was interesting to note," Lewis said, "that despite the increasing complexity of all products, whether laundry, kitchen, or refrigeration, the service incidence today is less than, or in no instances greater than, that of seven years ago." "This gives us some comfort," he continued, "but—not complacency! We recognize the challenge for further improvement and are meeting it head-on."

In concluding his remarks, the speaker said, "The real appliance service problem is the acceptance of service problems as part of our business and facing up to them in a straightforward and positive manner." His closing suggestions were, "At the manufacturer's level, let's develop a sincere and honest desire for a quality product, easily maintained and approaching lifetime reliability. Let's design that product for the user and not for the market place. From the standpoint of the service industry, let's upgrade the serviceman, let's improve his training and let's make genuine repair parts readily available to him. Let's suggest that one of the great appliance industry associations develop an anonymous reporting system on product reliability in order that minimum standards may be maintained on service incidence and industry reputation protected. . . ."

Automatic sheet-feeding unit



Four pivoting arms mounted in pairs support a vacuum lifting mechanism. Frame has a probe which adjusts the swing to the diminishing height of the stack.

A NEW FEEDING UNIT that enables one man to feed sheets or plates into a press at the rate of one per minute has been introduced. The unit handles plates up to 8 feet x 12 feet in size and weighing up to 600 pounds each, thus eliminating the costly and dangerous manual "gang" operation formerly used.

According to a company spokesman, the new device will pick up a sheet or plate from a stack automatically, place it on a table of driven rolls, align it accurately and automatically with the dies, and feed it into the press. Operation can be continuous at a fixed cycle, or intermittently.

The equipment consists of a table of "I" beams, mounted transversely and provided with adjustable side guides to assist the crane operator in locating the stack of plates or sheets in approximate alignment with the machine. Four pivoting arms mounted in pairs, two on each side of the machine, support a vacuum lifting mechanism, the frame being fitted with a probe to adjust the swing

to the diminishing height of the stack. The vacuum mechanism then picks up the plate in a horizontal position and carries it to a position about an inch above the driven-roll feed table.

When the vacuum is released, the plate drops down onto the feed table, is aligned with the dies by side rollers, and is advanced into the press. After releasing, the pivoting arms and vacuum mechanism immediately swing back, pick up the next plate, and either drop it onto the feed table, or hold it suspended until the operator presses a vacuum release button. The latter action occurs in intermittent operation.

The equipment requires 10½ feet x 28 feet floor space with about 10 feet of head room, although variations from this standard are available. The unit can be used as a stacker, also.

For further information, contact Special Projects Editor, METAL PRODUCTS MANUFACTURING, York St. at Park Ave., Elmhurst, Ill.

Philco Corp.'s Government & Industrial Div. has named Alan O. Mann to the newly-created position of commercial coordinator-computer and automation department head. As senior member of Alan O. Mann & Assoc., management consultants, he served as consultant to the Philco Transac computer program since 1956.

The O. Hommel Co., Pittsburgh, manufacturer of raw materials for the coating industries, has expanded its sales staff in the Chemical & Equipment Div. with the appointment of Leonard N. Wolf. He will be primarily concerned with sales of aluminum pigments, alcohols, chemicals, oils, and specialties.

Lepel
HIGH FREQUENCY
INDUCTION
HEATING
UNITS

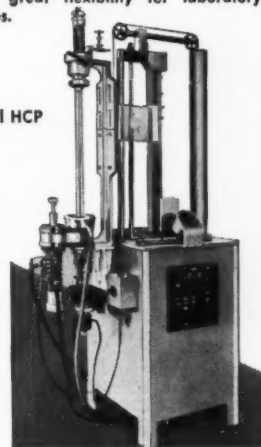
Brazing
Soldering
Melting
Hardening
Annealing

Lepel induction heating equipment represents the most advanced thought in the field of electronics — the most practical and efficient source of heat developed for numerous industrial applications. You are invited to send samples of work with specifications. Our engineers will process and return the completed job with full data and recommendations without cost or obligations.

FLOATING ZONE UNIT FOR METAL REFINING AND CRYSTAL GROWING

A new floating zone fixture for the production of ultra-high purity metals and semi-conductor materials. Purification or crystal growing is achieved by traversing a narrow molten zone along the length of the process bar while it is being supported vertically in vacuum or inert gas. Designed primarily for production purposes, Model HCP also provides great flexibility for laboratory studies.

Model HCP



Features

- A smooth, positive mechanical drive system with continuously variable up, down and rotational speeds, all independently controlled.
- An arrangement to rapidly center the process bar within a straight walled quartz tube supported between gas-tight, water-cooled end plates. Placement of the quartz tube is rather simple and adapters can be used to accommodate larger diameter tubes for larger process bars.
- Continuous water cooling for the outside of the quartz tube during operation.
- Assembly and dis-assembly of this system including removal of the completed process bar is simple and rapid.

Electronic Tube Generators from 1 kw to 100 kw.
Spark Gap Converters from 2 kw to 30 kw.

WRITE FOR THE NEW LEPEL CATALOG



All Lepel equipment is certified to comply with the requirements of the F.C.C.

LEPEL HIGH FREQUENCY LABORATORIES, INC.

35th STREET and 37th AVENUE, WOODSIDE 77, N. Y.

INDUSTRY PERSONALS

Detroit Controls Div., American-Standard, has announced the appointment of **Robert R. Ashley** as manager of manufacturing for its Stratford, Conn. plant. George F. Butterfield, division manager of manufacturing, said that Ashley's appointment is effective immediately. Ashley has most recently been foundry manager of the Schaible Div. at Cincinnati.

Westinghouse Electric Corp. has announced that a new supply depot to be built in Columbus will be headed by **George T. Geiser**. The 40,000 square foot supply depot, to be built next to the firm's West Broad Street manufacturing plant, will be completed by the end of the year.

Seaporcel Metals, Inc., Long Island City, N.Y., producer of architectural porcelain products, has named **Stuart B. Greenfield** as general sales manager, according to Benjamin B. Loring, president. Greenfield was formerly executive vice president of Vista-Lux Corp., building materials manufacturer.

Ferro Corp.'s Furnace Engineering Div. has announced the appointment of **Alfred B. Kimpel** as West Coast sales and service engineer. He will make his headquarters at the Ferro plant at 5309 S. District Blvd., Los Angeles, Calif. Ferro designs and builds continuous metal finishing equipment, including furnaces, dryers, and spray pickling machines.



GREENFIELD



KIMPEL

Permaglas Mechanized Storage, A. O. Smith Corp., has appointed two industrial area sales managers as the first step of a new sales program for mechanized storage units to be used in bulk materials handling. They are **Roscoe R. Heard, Jr.**, who will direct sales activities in the New England, Middle Atlantic, and Southeastern territories, and **Clifford P. Sell**, who has been assigned to the Great Lakes and Central states areas.

Crane Co. has announced the appointment of **John P. Magos** as director of engineering, according to T. M. Evans, chairman of the board. He replaces Dr. Maurice Nelles, who resigned as vice president of engineering. Magos has been with Crane for 36 years, serving as executive assistant to the engineering vice president for the past two years.

Worthington Corp.'s Air Conditioning & Refrigeration Div. has named **A. James Hackl** general manager, it was announced by Frank J. Nunlist, group vice president. Hackl will be located in the division's main office at the Ampere Works, East Orange, N.J. Prior to joining Worthington, he was with Trane Co. as general sales manager for packaged air conditioning products.

York Div., Borg-Warner Corp., has named **Richard J. Halloran** general manager of its Decatur, Ill. works. E. F. Peslar, vice president and director of operations for York, announced the appointment. Halloran has been with York since 1947 and has served as assistant to President Henry M. Haase.

Lawrence H. Wilson Associates, Detroit, industrial design and styling firm, has added two industrial designers to its staff. **Harold N. Minick**, previously with the Kelvinator industrial design staff, will specialize on major appliance design. **Norbert T. Buiter** will work on radio, television, and hi-fi product design for the firm's Admiral Corp. account in Chicago.

Southington Hardware Div., Screw and Bolt Corp. of America, has announced the appointment of **Cyrus C. Chamberlin** as vice president-sales. Formerly general manager of the Southington, Conn. division, Chamberlin has been in the industrial fastener field for 25 years.

Interchemical Corp.'s newly-established Commercial Development Department has named **Zeno W. Wicks, Jr.** as manager, while **Charles S. Rowland** moves over to the Central Research Laboratories to replace Wicks as director. Interchemical manufactures printing inks for packaging, and industrial finishes.

Whirlpool International's president, Robert M. Mitchell, announced the addition of **Kenneth C. F. Voeller** to the staff as sales manager. He will report to Conde Maiden, vice president of Whirlpool International, Bahamas S.A., and will work out of the Nassau office.

Amchem Products, Inc., Ambler, Pa., manufacturer of industrial chemicals, has announced that **Dr. Louis Schiffman** has joined the firm for research and product development work at the company's Metalworking Chemicals Div. Prior to joining Amchem, he was with the Atlantic Refining Co. and the DuPont Co.

Armstrong Products Corp., Huntington, W.Va., manufacturer of gas and electric heaters, gas logs, electric ironers, and lawn sprinklers and spreaders, has announced the appointment of **Phil Sasser** as vice president and assistant general manager, according to L. O. Reese, president. For the past three years, Sasser was president of General Mining & Construction Corp., and prior to that, president of Sasser Publications, Inc., producers of *Buy Lines*.



SCHIFFMAN



SASSER

Armco Steel Corp.'s Sales Service Dept. has named **James E. Lyons** assistant manager, according to W. B. Quail, vice president in charge of sales of the Armco Div. Lyons had been assistant to the manager of sales service since 1956.

Cribben & Sexton Co., Chicago, manufacturers of Universal gas and electric appliances, announced the appointment of **James B. Paschal** as quality control manager. Having served as statistical quality control executive for the past 12 years, Paschal will head the department responsible for the inspection and control of all of the company's products in both the domestic and institutional lines.

H. D. Conkey & Co., Mendota, Ill., manufacturer of overhead traveling cranes, draft controls, and specialized contract work, has announced the election of **A. B. Carlson** to the office of engineering vice president. He has been with the organization for 24 years, serving in recent years as chief engineer.

Lewin-Mathes Co. Div., Cerro de Pasco Corp., has elected **Edward F. Schweich** president to succeed Richard H. Lewin. Schweich was promoted to executive vice president last year after

having served as secretary for most of his 30-year association with the company.

Long Mfg. Div., Borg-Warner Corp., has elected **W. E. Rowe** as vice president of manufacturing. The appointment was announced by Harry H. Whittingham, president of the division. Rowe has been director of manufacturing for Long plants in Detroit. The Detroit firm manufactures radiators and other heat exchanger products, clutches, and torque converters.

Cerro de Pasco Corp.'s board of directors has announced the appointment of **Richard H. Lewin** as vice president in charge of domestic nonferrous metal fabricating operations. He was formerly president of the corporation's Lewin-Mathes Div.

The company's fabricating operations in the U.S. consist of three wire and cable plants in Connecticut and New York, copper and brass mills in Pennsylvania, Illinois, and California, and an aluminum sheet mill in West Virginia.

Permaglas Div., A. O. Smith Corp., has named **L. H. Hoelter** sales manager of water softener products, according to J. W. Burleson, general sales manager of the division. In his new post, Hoelter will guide sales moves of the recently purchased domestic water softener business of the Refinite Corp., Omaha, Nebraska.

Aluminum Co. of America and its subsidiaries have announced the appointment of **Thomas O. English** as general purchasing agent. English has been assistant general purchasing agent since 1944. He joined Alcoa in 1929.

Bridgeport Thermostat Div., Robertshaw-Fulton Controls Co., has named **Donald J. Neary** production manager, according to an announcement by A. D. Rapuano, vice president and general manager of the division. Neary has been assistant production manager since 1953. The division manufactures metallic bellows, refrigeration controls, and other temperature and pressure controls.

Metals Div. of Olin Mathieson Chemical Corp. has appointed **N. H. Collisson** as operating head. Formerly in charge of production and engineering for the corporation, Collisson is also a corporate vice president. At the same time, **M. L. Herzog**, also a corporate vice president, has been named general manager of operations in the Metals Div., and will report to Collisson.

Viking Air Products, Cleveland, has named **John M. Furin** to the newly-created post of supervisor of sales, and **John Thibo** as advertising manager. The appointments were announced by Dick Gang, general sales manager. Furin, who joined Viking in '55, will direct all sales to residential furnace and air conditioning manufacturers.

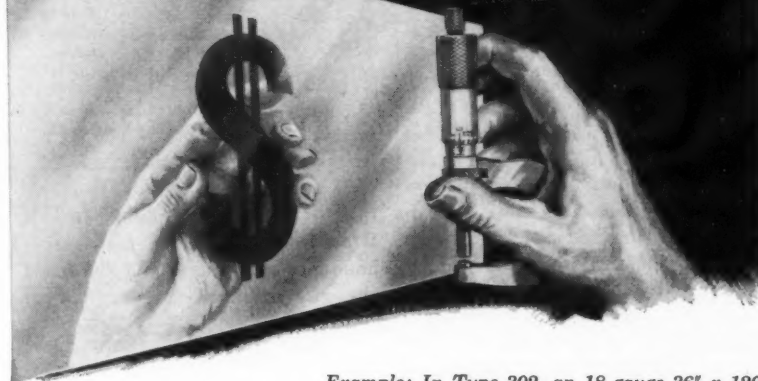
Borg-Warner Corp.'s Norge Div. has appointed **George W. Snell** as sales administrator, with offices in the company's Chicago headquarters. Snell will be responsible for internal administration of the sales department, nationally,

have liaison with 87 national distributors, and control order policies. He will report to James D. Dougherty, sales manager.

Minneapolis-Honeywell Regulator Co.'s newly-developed line of electric instrumentation will have **Harry D. Ruch** as product sales manager, according to O. B. Wilson, Industrial Products Group vice president. The electric instrumentation consists of more than 20 major types of indicating, recording, and control devices being produced at the company's Fall River, Mass. plant.

Crucible Steel Co. of America has

How much does each .001" of Stainless Steel Sheet cost?



Example: In Type 302, an 18 gauge 36" x 120" sheet has a base price of 52¢ per pound. In sheets of this size, each .001" of thickness weighs 1.26 pounds per sheet. Thus, each .001" of unnecessary thickness costs you at least 65.5¢ more per sheet.

On the surface this may seem insignificant, but it has a marked effect on the total price you pay for a given quantity of stainless steel sheet. With cost a factor, this can be important since stainless steel is purchased by weight.

Using the above example, a mere .001" of unnecessary thickness costs you \$20.76 more per ton. If you figure the maximum allowable gauge thickness variation of plus or minus (10%), you can readily see that the price you pay for overall sheet thickness could involve much needless cost.

Washington Steel has the equipment and the experience to produce MICRO-ROLD stainless steel to tolerances much closer than standard industry tolerances. Usually money can be saved by first selecting the minimum gauge that will serve the requirements of the application, and then specifying that the thickness be rolled to the light side of the gauge range. This specification involves no cost extra and is standard practice at Washington Steel. (If exact close tolerances must be guaranteed, there is a nominal additional charge.)

Consult your nearest MicroRold Stainless Steel Distributor. He will gladly show you how to save money on your stainless steel purchases.

Washington Steel Corporation

7-G Woodland & Griffith Avenues

Washington, Pa.



named **Joseph F. O'Hara** as Eastern regional sales manager. He replaces **William E. Pennington**, who will concentrate in the planning and promotion of cutlery steels. Both will maintain offices in the Chrysler Bldg., New York City.

Robertshaw-Fulton Controls Co.'s Eastern Research Center has appointed **William M. Harcum** general manager, according to an announcement by **T. T. Arden**, president of the controls producing firm.

Harcum, formerly head of the research center's physics department, replaces **Ralph V. Coles**, who has been named general manager, European operations, with offices in London, England.

Remington Rand Div. of Sperry Rand Corp. has named **Jay W. Schnackel** as vice president in the company's Univac-Tabulating Div. Before coming to Remington Rand, he was vice president for manufacturing services of International Business Machines Corp. since 1956.

Hydrometals, Inc.'s board of directors has announced the election of **Fred M. Zeder, II** as president and chief executive officer. At the same time, **William M. Hayden**, president of **Hayden Metals**, a subsidiary of **Hydrometals**, was named chairman of the board. **Hydrometals** produces and fabricates zinc and zinc products.

Olin Aluminum, a subsidiary of **Olin Mathieson Chemical Co.**, has announced the appointment of **Forrest F. Tiffany** as director of market development. He had been southwestern regional sales manager. The appointment was announced by **Derek Richardson**, vice president for aluminum sales, **Metals Div.**

American Metal Products Co.'s De-



ZEDER



TIFFANY

troit plant has appointed **Joseph A. Rzezutko** production manager. The announcement was made by **Ernst G. Ott**, vice president in charge of manufacturing.

Montgomery Ward & Co., Chicago, has named **William W. Davis**, buyer of refrigerators and freezers, to the post of radio and television department manager. He succeeds **Clyde K. Huxtable**, who will develop, buy, and merchandise major electronic lines.

Concurrently, **John M. Fisher** was named refrigerator buyer, and **William D. Hunter** was named buyer of freezers.

Sparton Corp., Jackson, Mich., has announced the election of **W. Richard Murphy** to the office of vice president and general sales manager of all **Sparton Corporation Divisions**.

Kelvinator Div., American Motors Corp., has named **E. G. Haight** as contract sales manager, succeeding **Charles H. Herrlich**, who retired recently. The announcement was made by **H. Hondorp**, manufacturing manager.

Haight has been with **Kelvinator** since 1945, serving as an assistant sales manager, and sales manager of the commercial wholesale department.

WANT TO INCREASE SALES WITH DIRECT MAIL?

Try DMCP*

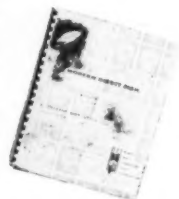
It can help you step up sales at pennies per "call." National in scope and local in operation, this service is a new, successful approach to direct mail selling. It has met with such great success that **DMCP** offices now are located in more than 25 major cities. There's one near you.

DMCP* is used with success in all fields. It sells industrial equipment and seeds . . . food and flowers . . . milk and insurance . . . the list is endless.

You'll find the full story of **DMCP*** and how it can help you in our book, "Modern Direct Mail." It tells how you can sell more with direct mail and provides you with cost data, case histories and information on how YOU can get started in a direct mail sales program. The book is yours if you fill out the coupon and mail it to us . . . or request a copy on your letterhead.

***DMCP** means Direct Mail, Creation, Production. And to you, that means **SALES**.

DMCP Associates
1814-16 Jefferson Ave.
Toledo 2, Ohio, CH. 4-8316



T W X TO 372 U

DMCP Associates

1814 Jefferson Ave.
Toledo 2, Ohio

Rush me my FREE copy of "Modern Direct Mail"

Name _____

Title _____

Firm _____

Street address _____

City, Zone, State _____

Direct Mail
Creation Production

HUYCK FURNISHES FIREBRICK MASONRY TO BUILD, REBUILD AND REPAIR ALL TYPES OF: ENAMELING FURNACES . . . FRIT SMELTERS . . . ALUMINUM, BRASS, LEAD SMELTERS . . . FORGE FURNACES . . . HEAT TREATING FURNACES.

HUYCK LINES AND RELINES MILLS



Huyck construction

COMPANY..

HUYCK MASONRY IS GUARANTEED TO GIVE YOU BETTER PERFORMANCE AND LONGER LIFE

1861 DeCook Avenue • Park Ridge, Illinois • TAlcott 3-0612

METAL PRODUCTS STATISTICS

a current report on available production, shipment and sales figures for important products in the appliance and fabricated metal products manufacturing field

	1959 (Units)	1958 (Units)	% Change
Gas Water Heaters.....April	261,900	221,900	+18.0
Jan.-April	1,053,700	895,200	+17.7
Gas Ranges, Built-In.....April	28,800	14,800	+94.6
Jan.-April	92,400	56,600	+63.3
Gas Ranges, Free-Standing...April	139,100	133,500	+ 4.2
Jan.-April	548,200	503,400	+ 8.9
Gas Furnaces.....April	74,600	49,100	+51.9
Jan.-April	270,200	192,100	+40.7
Gas Fired Boilers.....April	8,900	7,400	+20.3
Jan.-April	28,000	23,500	+19.1
Gas Conversion Burners.....April	6,800	7,600	-10.5
Jan.-April	26,100	28,900	- 9.7
Electric Refrigerators.....April	301,000	210,800	+42.8
Jan.-April	1,197,100	905,800	+32.2
Electric Freezers.....April	112,000	79,300	+41.2
Jan.-April	403,700	284,200	+42.0
Electric Ranges, Free-Standing..April	79,700	58,300	+36.5
Jan.-April	347,100	283,200	+22.6
Electric Ranges, Built-In.....April	56,400	37,300	+51.2
Jan.-April	217,000	148,000	+46.6
Electric Storage Water Heaters..April	71,700	68,500	+ 4.7
Jan.-April	284,300	256,800	+10.7
Electric Dishwashers.....April	42,400	26,700	+58.8
Jan.-April	168,800	119,200	+41.6
Electric Food Waste Disposers..April	63,200	40,000	+58.0
Jan.-April	232,300	175,000	+32.7
Combination Washer-Dryer...April	11,507	11,847	- 3.0
Jan.-April	65,222	50,002	+30.0
Washers, Automatic & Semi...April	202,259	166,468	+22.0
Jan.-April	903,836	778,549	+16.0
Washers, Wringer & Others...April	72,113	58,428	+23.0
Jan.-April	286,521	247,214	+16.0
Electric Dryers.....April	43,945	27,875	+58.0
Jan.-April	260,630	208,348	+25.0
Gas Dryers.....April	23,807	10,600	+125.0
Jan.-April	130,050	82,126	+58.0
Vacuum Cleaners.....April	317,402	247,293	+28.4
Jan.-April	1,177,871	1,029,831	+14.4
Metal Furniture.....April	*	*	+21.0
Jan.-April	*	*	+ 3.0
†Television.....April	389,251	213,520	+82.3
Jan.-April	1,779,801	1,570,279	+13.3
†Radio.....April	617,837		
Jan.-April	4,215,513		
Compressor Bodies.....Feb.	560,571	*	*
Jan.-Feb. (1)	1,079,326	*	*
Steel Barrels & Drums.....March	2,893,000	2,517,711	+14.9
Jan.-Mar.	8,059,306	7,411,810	+ 8.7
Steel Pails.....March	6,639,223	5,414,444	+22.6
Jan.-Mar.	17,096,437	15,407,539	+10.9
Typewriters.....April	94,802	92,267	+ 2.7
Jan.-April	369,746	326,698	+13.2

(1) Includes units for household refrigerators

* Not Reported

† Output

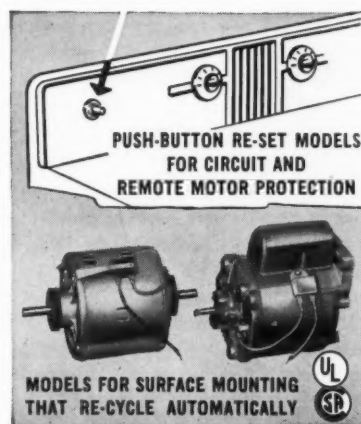
Sources for this information: Gas Appliance Manufacturers Association, National Electrical Manufacturers Association, American Home Laundry Manufacturers Association, Vacuum Cleaner Manufacturers Association, National Association of Furniture Manufacturers, Electronic Industries Association, Air-Conditioning and Refrigeration Institute, and U.S. Dept. of Commerce.

Protect your motors and circuits with

MP MINI-BREAKER®

17

appliance makers
say it really cuts
service problems,
adds sales spark



Here are sure, positive protectors against motor burn out and dangerous circuit overload. But they can be factory set for any time lag you may desire so normal overloads can be tolerated without nuisance trips. Easy mounting without harness saves money. Ratings to suit every appliance.

WRITE FOR NEW MINI-BREAKER.

MOTOR & CIRCUIT PROTECTION CATALOG



MECHANICAL PRODUCTS, Inc.
1824 RIVER ST., JACKSON, MICH.



Tappan "400" Gets Award

A year of successful sales for Tappan Co.'s new "400" electric range was recently climaxed with the product's selection as one of the 100 best designed products of recent years. A panel of 100 leading designers, architects, and educators made the selection.

Development of the free-standing range was prompted by a nation-wide survey that indicated electric appliance dealers were suffering a 30 per cent drop over a five-year period in the sale of built-ins.

Burkay Water Heaters Set All-Time Records

Monthly all-time records on orders, shipments, and dollar volume were set by Burkay commercial water heaters of the Permaglas Div., A. O. Smith Corp., during March, according to Don Williams, Burkay sales manager.

March, '58 totals were bettered by 61 per cent on shipments, 54 per cent on new orders, and 61 per cent on dollar volume. Burkay water heaters are sold both for commercial and domestic use.

Canadian Appliance Sales Up Faster Than U.S. Sales

The Canadian electrical appliance industry appears to be recovering from last year's business decline at a faster rate than its American counter-part, according to John Sinclair, president of Kelvinator of Canada, Ltd. "In five out of six major appliances, Canada is running relatively ahead of the U.S.," Sinclair stated.

Sinclair attributed the industry's increased sales pace to generally improved business conditions, plus a higher level of consumer confidence in appliances. As an example, Sinclair said that his own company's sales were up more than 32 per cent for the period of Oct., '58 through March, '59 over the same period one year previous.

Jensen Named NEMA Public Relations Chairman

Donald Jensen, public relations director, Square D Co., has been appointed chairman of a new advisory committee on public relations policy for the National Electrical Manufacturers Assn., it was announced by Joseph F. Miller, managing director of NEMA. A group of prominent public relations and advertising officials of member electrical companies will comprise the committee, according to Miller. They include K. W. Haagensen, vice president of public relations, Allis-Chalmers Mfg. Co.; Dale McFeatters, vice president-information services, Westinghouse Electric Corp.; Ralston B. Reid, advertising and sales promotion manager, General Electric Co.; and R. H. Smith, secretary, Reliance Electric and Engineering Co.

Carrier Corp. To Test Heating, Cooling Systems For Navy

Design studies to test the feasibility of thermoelectric heating and cooling in shipboard air conditioning will be undertaken by Carrier Corp. under a contract from the U.S. Navy. The 18-month program is intended to lead to large-scale development of thermoelectric heat pumps containing no moving parts, according to Dr. J. F. Downie Smith, vice president of research and development for Carrier.

Westinghouse Tests Rental Plan For Apartment Appliances

A plan to rent new appliances to apartment house owners and operators, and by which new models can replace them at frequent intervals, is being tested by Westinghouse Electric Corp.

The new proposal, which offers two, three, and five-year lease arrangements, is being made to owners and operators of multiple dwelling units in New York, Washington, Chicago, San Francisco, and Los Angeles.

Kelvinator Initiates Service Section

Expansion of customer service relations within the national service department has been announced by Kelvinator. Formation of a separate section recognizes the growing importance of customer service relations, according to R. S. Geran, national service manager. Customer service relations had previously been a part of field service.

John L. Rood, former service supervisor, assumes the position of manager of the new section.

General Electric Moves Regional Sales Office

General Electric's Communication Products Dept. has moved its south-eastern regional, two-way radio, sales office from Atlanta, Ga. to Tallahassee, Fla. J. W. Bryant moves over from Atlanta to take charge of the new office, located in Tallahassee's Petroleum Bldg. The regional office coordinates sales activities of two-way radios in Alabama, Georgia, Florida, and parts of Louisiana and Mississippi.

Welding Machine Orders Rise 31 Per Cent Over 1958

New orders for resistance welding machines and equipment received by members of the Resistance Welder Manufacturers' Assn. were 31 per cent ahead of orders for the first four months of '58, according to a statistical report compiled by the association.

Shipments for the first four months of '59 were 15 per cent above the same period a year ago. New business has been coming in at a rate of approximately \$2½ million per month in '59.

Refrigerator Wins Duke Of Edinburgh's Prize



The Duke of Edinburgh's personal prize for "elegant design" was won by this refrigerator designed by C. W. F. Longman of the Prestcold Div., Pressed Steel Co. Ltd. of England, in association with E. H. Wilkes, a consultant design engineer. It was described as having "finely radiused corners, precision assembly, well-shaped handle on contrasting chromium finish, and the absence of self-conscious 'streamlining' or 'styling.'" The refrigerator was selected from thousands of products shown at London's Design Center last year.

Whirlpool Appliances Up 37 Per Cent For First Four Months

Sales to dealers of RCA Whirlpool appliances for the first four months were 37 per cent ahead of the equivalent period in '58, according to John A. Hurley, vice president of sales. Electric refrigerator sales were up 41 per cent, automatic washer sales went up 22 per cent, dryer sales gained 39 per cent, wringer washer sales were up 79 per cent, built-in electric ovens gained 77 per cent, built-in gas ovens went up 148 per cent, and dishwashers were up 47 per cent.

Two highly seasonal appliances, air conditioners and freezers, gained 33 and 34 per cent, respectively.

Roper Top Burner Controls Flame Initially

An automatic top burner that provides greater flame control for cooking has been introduced by the Geo. D. Roper Corp., Kankakee, Ill. According to a company spokesman, the housewife does not have to worry about uncontrolled flame size before the pre-set temperature is reached. It is controlled from the start. A modern, slim-line design is used for the control knob to match other Roper valve handles.

Pfadtler Permutit Orders Up

Mercer Brugler, chairman of the board of Pfadtler Permutit, Inc., told the annual meeting of shareholders in Rochester that unfilled orders increased more than seven per cent in the first quarter of '59. Unfilled orders rose to \$8,500,000 from about \$7,870,000 at the close of 1958.

Aldrich Co. Joins GAMA

The Aldrich Co., Wyoming, Ill., has been elected to membership in the gas boiler division of the Gas Appliance Manufacturers Assn., according to Harold Massey, GAMA managing director. The company manufactures gas-fired boilers for home heating systems, and gas water heaters.

Roper Sales, Profits Up

Geo. D. Roper Corp. sales for the 16 weeks ended April 25, 1959 were \$10,290,317 as compared with \$8,987,935 for the same period in '58. Net profit for this period was \$315,290 compared with a loss of \$91,022 last year. The latter figure included non-recurring expenses totaling \$172,447 covering the cost of acquisition of the corporation, and the amortization of unused Roper dies.

Vending Convention Dates Changed

Dates of the 1959 annual convention-exhibit of automatic merchandising, sponsored by the National Automatic Merchandising Assn., have been changed to October 31 to Nov. 3, according to W. T. Collett, general chairman of the convention. The dates were originally November 1-4.

The convention will take place at Chicago's Navy Pier, with the Conrad Hilton Hotel serving as the official convention headquarters.

New Furniture Orders Rise 24 Per Cent

National Assn. of Furniture Manufacturers members continued to show improvement in orders over last year. April new orders were 24 per cent higher and total orders for the year stand at 19 per cent higher than '58. April shipments were 21 per cent more than April '58.

EIA Honors Lack

Leading manufacturers of commercial electronic equipment gathered to honor Frederick R. Lack, retired vice president of Western Electric Co., at the 35th annual convention of the Electronic Industries Assn. in Chicago, May 20-22. EIA represents manufacturers of radio and television sets, components, and tubes as well as commercial equipment makers.

Lukens Appointed By AISI

Karl F. Lukens has been appointed chairman of the committee on steel pipe research by the American Iron & Steel Institute. He is vice president in charge of sales, Wheatland Tube Co., Philadelphia, Pa.

NAAMM Committee Appointments

Ralph L. McKenzie, president of the Metal Curtain Wall Division of the National Association of Architectural Metal Manufacturers, announced the following committee appointments for the division for the year 1959-60:

Jack M. Roehm, Kawneer Co., Niles, Mich., chairman of the Research and Development committee; William H. Withey, Armco Steel Corp., Middletown, Ohio, chairman of the Market Development committee; Richard A. Biggs, Union Carbide Metals Co., New York, chairman of the Consultation committee; Gordon H. Smith, Albro Metal Products Corp., New York, chairman of the Legislative committee; Richard D. Hickman, A. F. Jorss Iron Works Inc., Arlington, Va., chairman of the By-laws committee; David Miller, Kawneer Co., Niles, Mich., chairman of the Membership committee, and Neil C. Dostal, Moy-nahan Bronze, Flat Rock, Mich., chairman of the Labor Relations committee.

AGA Approves Direct Spark Ignition System

An automatic direct spark ignition system developed by Controls Co. of America for gas clothes dryers has been approved by the American Gas Assn. The ignition system was first introduced in October, 1958. According to D. M. Strathearn, vice president of Controls Co., this action opens the door for a wide range of other applications for the system.

Alcoa Tests Zinc Soldering Process

Tests conducted by Aluminum Co. of America on a zinc soldering process for joining aluminum to itself and other metals is expected by the company to broaden the metal's use in the refrigeration, air conditioning, and electrical industries.

The tests indicate that the zinc technique, though not new, offers the best method for making sound, corrosion-resistant, soldered joints. Alcoa engi-

Maytag President Addresses Commercial Laundry Distributors

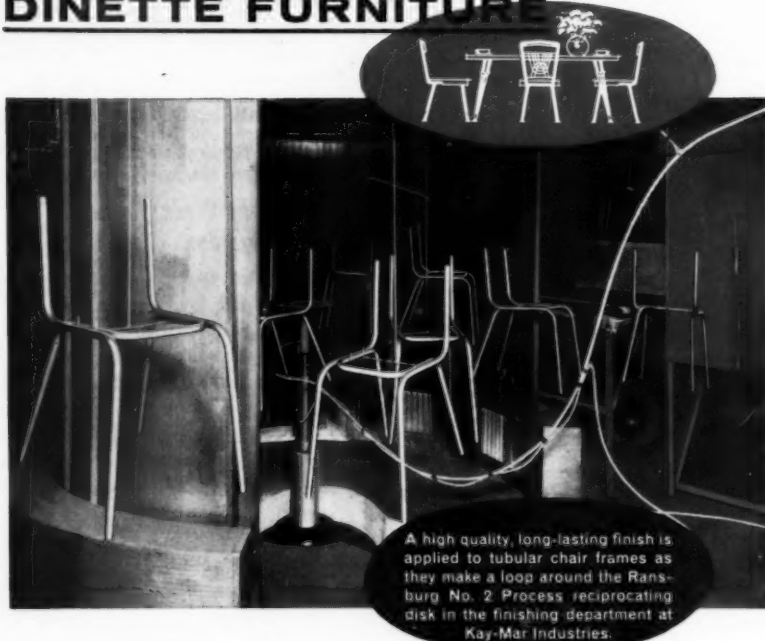
Fred Maytag II, president of the Maytag Co., Newton, Iowa, speaks to representatives of the appliance firm's coin-operated, commercial laundry distributors at the group's first convention held at Maytag headquarters in Newton recently. More than 40 persons, representing 25 independent distributors in the U.S. and Canada, attended the convention.



RANSBURG

Electro-Spray...

**PROVIDES 50% PAINT SAVING
(over the former dip method)
in the finishing of KAY-MAR
DINETTE FURNITURE**



● Kay-Mar Industries, Cassopolis, Michigan, switched from the dip method to Ransburg Electrostatic Spray Painting because they wanted to improve the quality of the finish on their metal furniture line.

Now, with electrostatic spray painting, they get a heavier, more uniform application, which was not possible with former dip. With electrostatic, they are able to use metallic coatings with higher metal content. In their magazine advertising to the mobile home industry, they proudly say: "Finest finish in the industry at no additional cost to you!"

Electrostatic provides other advantages at Kay-Mar. They picked up some additional—and much needed—floor space when dip tanks were removed. Their insurance rates were reduced because of improved "housekeeping" conditions. Frequent color changes are made quickly and simply, and rejects—which used to run 1 1/2%—are reduced to less than a quarter of one per cent.

NO REASON WHY YOU CAN'T DO IT, TOO!

Let us test prove the advantages of automatic electrostatic spray painting on your products in our complete laboratories. No obligation. Call or write for our No. 2 Process brochure, which shows a variety of automatic painting installations on a wide variety of products. Or, if your production doesn't justify automatic painting, let us tell you about the new Ransburg No. 2 Process electrostatic hand gun, now widely used by both large and small manufacturers.



RANSBURG

RANSBURG

Electro-Coating Corp.

Box-23122, Indianapolis 23, Indiana

neers also found the process to be superior to brazing for several applications.

These applications include metallurgical bonding of aluminum spirally wrapped, or plate fins, to aluminum, copper, or steel tube, and bonding socketed tube joints and dissimilar metal transition joints.

L. R. Kerns Celebrates 25th Anniversary

L. R. Kerns Co., manufacturer of drawing, cutting, grinding, forging, phosphatizing, cleaning, spray booth, and wire drawing compounds, will celebrate its silver anniversary in August.

According to B. L. Smalley, president, the company was founded just a few blocks from its present location at 2659 E. 95th St. in Chicago. In 1957, a subsidiary plant was put into operation in Orange, Calif. to serve 11 western states. Kerns also produces industrial oils, greases, and rust preventatives.

ARI Adds To Engineering Staff

Marcel R. Martin has joined the Engineering Dept. staff of the Air-Conditioning and Refrigeration Institute as assistant engineer, it was announced by Frederick J. Reed, chief engineer of ARI. Martin will assist Reed in his work with the engineering and standards committees of ARI product-sections on standards, certification programs, and other technical matters.

GE Cleaner Now Available

An anti-static cleaner and polish used by General Electric to protect its high-impact, polystyrene television cabinets from damage during the assembly process has now been made available to the public through regular GE distribution channels. Used in its manufacturing operations, the preparation has proved effective in removing minor abrasions and surface scratches as well as providing a hard, protective coating.

Olin Offers 25-Pound Ingot

Olin Aluminum is now offering a 25-pound ingot at the same price per pound as a 30-pound ingot. Frank J. Daniels, manager of pig, ingot, and billet sales, Metals Div., Olin Mathieson Chemical Corp., stated that Olin is the first prime supplier to produce and offer the 25-pound ingot. He added that the ingot offers advantages to foundrymen in that, "Its increased surface area

to Page 73 →

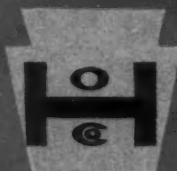
WHY every manufacturer should seriously consider HOMMEL FRIT

1

Hommel quality frits are engineered from the manufacturer's viewpoint . . . designed to meet his specific product requirements . . . without costly production-line changes.

2

Hommel frits are quality-controlled. Every batch must pass the most rigid inspections within the industry. You're assured of the same high performance from every bag.



3

A continuous flow of water shatters Hommel water quenched granular frits . . . giving better grinding characteristics and more stable enamel slips.

4

Hommel frits mean trouble-free production. Let your local Hommel representative show you the difference.

Dept. MPM-759

THE O. HOMMEL CO. PITTSBURGH 30, PA.

West Coast Warehouse, Laboratory and Office, 4747 E. 49th Street, Los Angeles, California

POTTERY • STEEL AND CAST IRON FRIT
CERAMIC COLORS • CHEMICALS • SUPPLIES

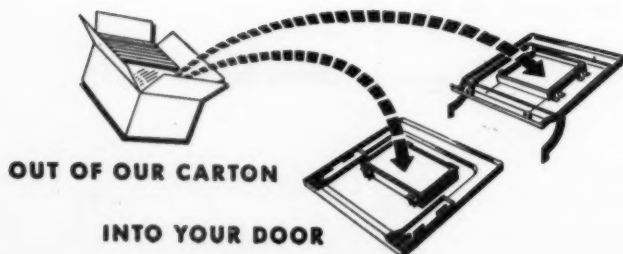
Our Technical Staff and Samples are available to you without obligation. Let us help with your problems.

World's Most Complete Ceramic Supplier

The Answer to "visible"



This is a partial list of range manufacturers which use the PERMA-VIEW window in their built-in ovens: Admiral Corporation; Athens Stove Works; Avco Manufacturing Corporation, Crosley Division; Canadian Admiral Corporation, Ltd.; Canadian General Electric Company Limited; Canadian Westinghouse Company Limited; Dixie Products, Inc.; General Electric Company; Gibson Refrigerator Company; Gray & Dudley Company; Hardwick Stove Company; Hotpoint Company; Kelvinator Division, American Motors Corporation; Midwest Manufacturing Corporation; Moffats Limited; Mt. Vernon Furnace & Mfg. Co.; Oakland Foundry; Pan Pacific Manufacturing Co.; Philco Corporation; Phillips & Butterff Corporation; Preway, Inc.; Samuel Stamping & Enameling Company; J. B. Slattery & Bros., Inc.; National Stove; Stiglitz Corporation; The Stove Works, Inc.; Tennessee Stove Works; Utility Appliance Corp.; Harry C. Weiskitel Co. Inc.; and Westinghouse Electric Corporation.



A phone call or letter will bring an experienced engineer to your plant for prompt consultation. Phone MARKET 4-1591, Walled Lake, Michigan.

baking...

PERMA-VIEW

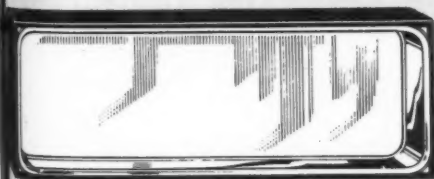
Range manufacturers are well aware of the increase in demand for "visible baking" during recent years. The PERMA-VIEW oven door window is the most logical and most economical answer to this demand.



In just eight short years, the PERMA-VIEW window has become the accepted standard in the range industry. Today 80 of the leading range manufacturers are using the PERMA-VIEW window. For both free-standing ranges and built-in oven units "the window you can see through always" is the accepted standard.

As a practical, economical and effective component, PERMA-VIEW can be your best sales feature. Be sure you take advantage of this sales feature in your new models — either free-standing or built-in.

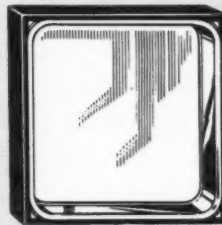
The strong steel encased, double pane PERMA-VIEW window incorporates the finest quality heat resisting glass. It is mechanically sealed to prevent infiltration of vapors and to eliminate "fogging." This "No-Fog" window meets the constantly growing demand for "visible baking." We can manufacture any shape, any size, any thickness to meet your engineering requirements. Rectangular - round - square - trapezoid. Alternate methods of attachment may be used.



RECTANGULAR



ROUND



SQUARE



TRAPEZOID



**MILLS PRODUCTS
INCORPORATED**

1015 WEST MAPLE ROAD

WALLED LAKE, MICHIGAN

the use of
Architectural
Porcelain for old and
new buildings

is in an ascending curve

● Yes, it does appear that here is a big potential field for the enameler. The growing use of colorful porcelain enamel panels to modernize exteriors of *old* buildings indicates a tremendous market, aside from new construction.

Ing-Rich Architectural Porcelain FRIT "Know How" can be of tremendous help to the enameler in this rapidly growing market.

Some enamellers in this field have learned, the hard way, that just "any old Frit" won't do. Architectural Porcelain is going to take a tremendous beating from the weather. Unless frits are used which

are specifically developed for this highly specialized purpose, the enameler is "asking for trouble."

Ing-Rich has developed PROVEN RESULT FRITS for Architectural Porcelain.

Our experience in the development of these special Frits goes back over quite a period of years. We can bring "Plant Tested Know How" to the enameler of Architectural Porcelain which may save a lot of grief.

It will only cost you time, and no obligation, to hear our "Know How" story of PROVEN RESULT FRITS for Architectural Porcelain.

Pioneer Producer of
LIFETIME
Porcelain Enamel Products

INGRAM-RICHARDSON, INC.

OFFICES, LABORATORY AND PLANT
FRANKFORT, INDIANA



Industry News

→ from Page 68

improves the melting rate and its lighter weight facilitates handling and charging into furnaces."

The new ingot has three notches and four sections, compared to two notches and three sections of the 30-pound ingot.

Kaiser Adds Cell Facilities

Kaiser Aluminum & Chemical Corp. plans to expand its production of aluminum with the installation of additional refining cell facilities at the corporation's Mead, Wash. reduction plant. The cells, which refine aluminum to a purity of 99.99 per cent, are said to be among the largest of their type in the world.

Ferro Announces Contest Winners

William B. Blease, Jr., a senior at Clemson Agricultural College, Clemson, S.C., was awarded first prize in the 10th annual Ferro Student Contest in Porcelain Enameling. The nation-wide contest, which awards \$1,000 in cash prizes, is sponsored by Ferro Corp., Cleveland, Ohio to encourage original thinking in the field of porcelain enameling.

An award of \$500 was given to Blease



GENERAL

★ COMPLETE MPM SPECIAL REPORT ON OPERATIONS AT TEMCO OF NASHVILLE
VINYL ON METAL AT SUN STEEL

DESIGN

DESIGN FOR AN ELECTRIC MIXER

FABRICATION

BUFFING OF STAINLESS STEEL
PROCESSING METAL TOPS AT
ALL-STEEL EQUIPMENT

FINISHING

PAINTING HEATER PARTS AT TEMCO
PORCELAIN ENAMELING RANGE PARTS
AT TEMCO

GENERAL INDUSTRIES

Smooth Power

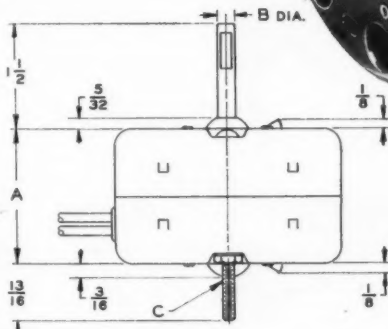
AC MOTORS

1/1800 H. P. TO 1/35 H. P.

ADVANCED MOTOR DESIGNS

that meet the demands of the most exacting requirements

Nearly half a century of design and manufacturing experience in the small motor field enables G. I. to offer the most advanced engineering features. This, together with top-notch production know-how and latest manufacturing facilities assure you quality, dependability and economy so necessary to the success of your products.



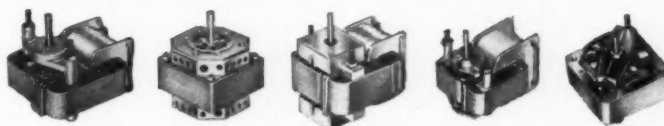
MODEL-B FOUR POLE, FOUR-COIL SHADED POLE MOTOR

Designed for long life and dynamically balanced for extremely quiet operation. Self aligning, self lubricating bronze bearings, baked, varnish-impregnated windings, ample oil reservoir located for easy lubrication. Smooth, quiet — field proven!

MODEL	HP 1500 RPM	Locked Torque in./oz.	Max. Torque in./oz.	Free Speed RPM	Amps 1500 RPM	Watts 1500 RPM	A	B	C	Wt. Lbs.
B-5-CW B-5-CCW	1/80	3.5	11	1735	.7	53	1 1/8"	1/4"	8-32	2.0
B-8-CW B-8-CCW	1/50	4.0	14	1750	.85	63	2 3/8"	1/4"	10-32	2.7
B-10-CW B-10-CCW	1/40	4.7	18	1750	.95	72	2 3/8"	5/16"	10-32	3.1
B-12-CW B-12-CCW	1/35	4.7	20	1760	1.05	77	2 3/8"	5/16"	10-32	3.4

Above base on fan application with air stream flowing over motor, without air flow derating necessary.

Designs to Meet the Needs of a Wide Range of Applications

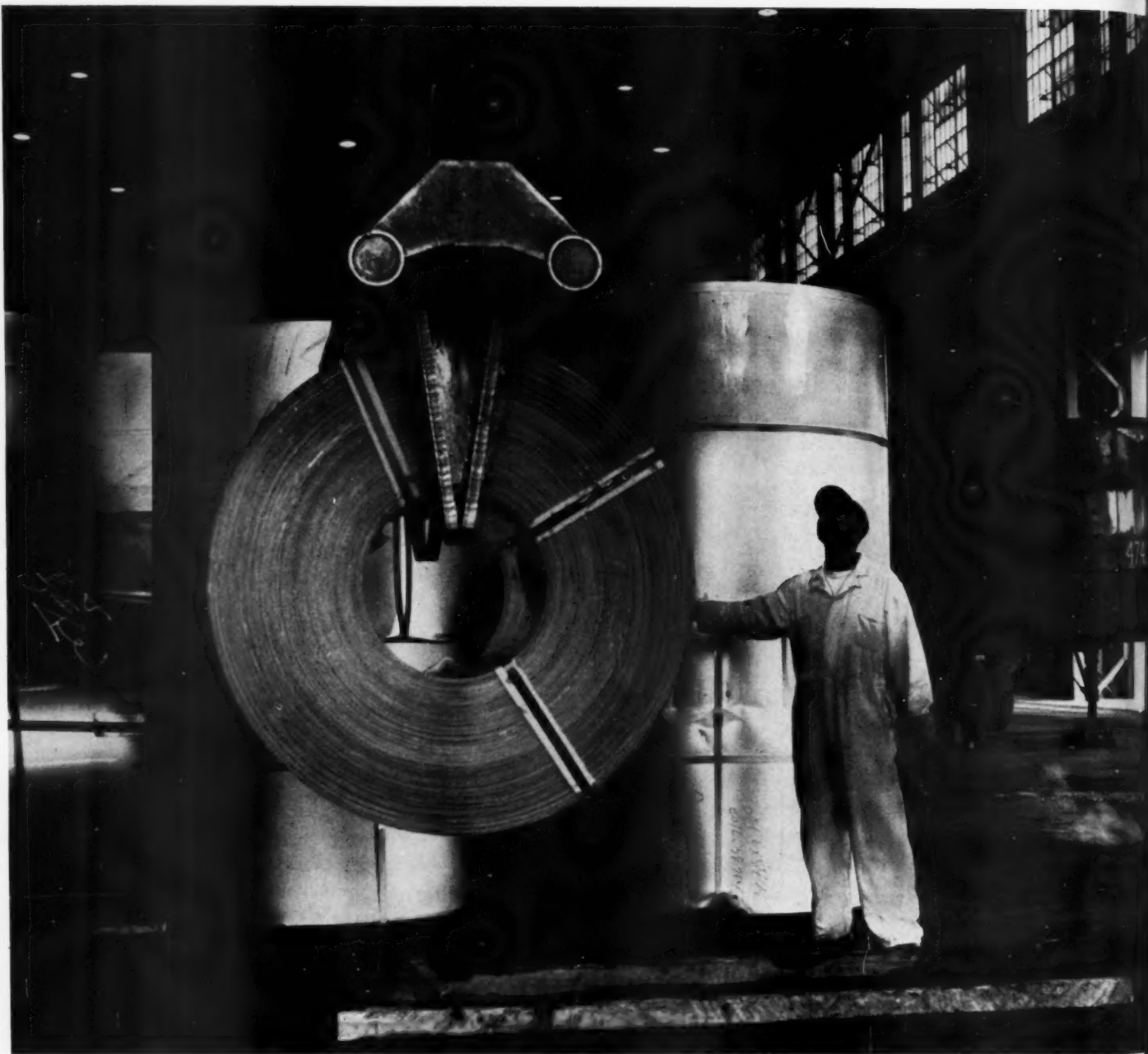


Write today for catalog sheet and quantity-price quotations.



THE GENERAL INDUSTRIES CO.

DEPT. GF • ELYRIA, OHIO



INSTANT STEEL

A CALL TO YOUR LOCAL STEEL DISTRIBUTOR ENDS IN-PLANT SHORTAGES FAST!

Emergency? Your steel service center can end it in a hurry with practically any amount, quality, size or shape of steel you may need. No more in-plant steel shortages—no more plant shutdowns—no more lost contracts.

Or you may choose to use his facilities, stocks and fast delivery service on a regular basis. Whatever your production needs, your local steel distributor is on hand ready to give instant service. All you have to do is phone.

Call him for any quantity of Weirkote continuous-process zinc-coated sheets, Weirzin electrolytic zinc-coated sheets, hot- or cold-rolled sheets or any type of steel you may need for any type of production job.



**WEIRTON STEEL
COMPANY**

WEIRTON, WEST VIRGINIA

a division of

NATIONAL STEEL CORPORATION

for his paper entitled, "Copper-heading—A Crystallization Phenomenon." Second prize of \$300 was given to Robert D. Shannon, a graduate student at the University of Illinois, for his paper entitled, "A Theory for the Yellow Discoloration of Titania Enamels."

Milton C. Otto, a senior at the University of Illinois, won a \$100 third prize for his paper, "Specific Resistance of

Titania Opacified Enamels as Related to Alkali Content." Other prize winners included Eugene L. Rusert, University of Missouri, and Phillip N. Bolinger, Ohio State University.

Minneapolis-Honeywell Div. Leases New Plant

Officials of the Beltsville, Md. Div., Minneapolis-Honeywell Regulator Co.,

have announced the expansion of facilities for the third time within a year, "to meet increased engineering and production requirements for high-speed instrumentation tape systems."

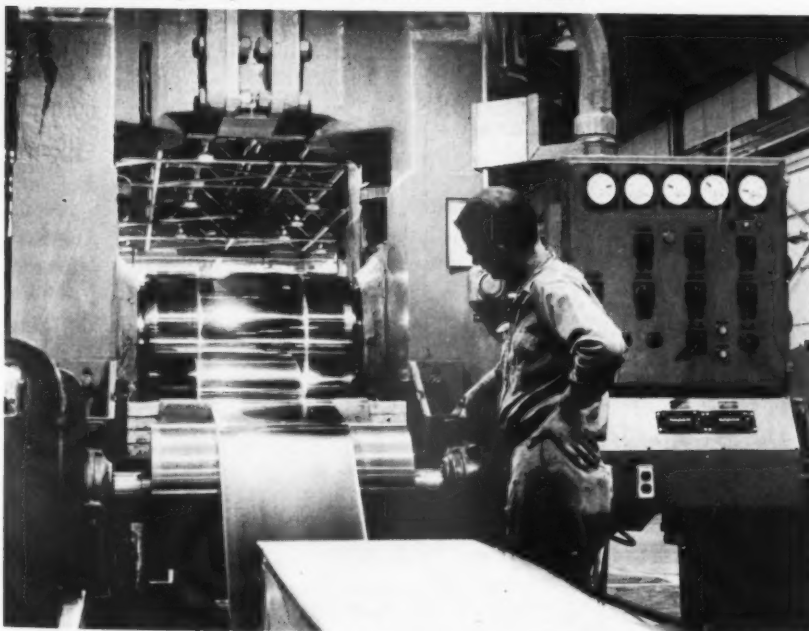
The expansion involves the leasing of a plant at Laurel, Md., five miles north of Beltsville, for production of magnetic heads used in recording and reproducing test data, and in memory devices of computers, ticket reservation systems, and automated bank machines.

Canadians Preview Lux Timer Line



Canadian customers recently previewed the Lux Clock new products line at Montreal's Mount Royal Hotel. The Waterbury, Conn. manufacturer unveiled new range timers and minute minders. The latest in dryer-washer timers were introduced. Attending the Lux presentation were: (back row-left to right) R. Watt, Silix of Canada, Ltd.; E. Wooley, T. Eaton Co.; L. Achim, Canadian Tappan Stove; A. Tanner and E. T. Crandall, Lux Clock; E. Cote, L. Mailhot, and M. Dion, E. Roy Industries, Ltd.; (front row-left to right) J. Gregorie and J. Brunk, Canadian Tappan Stove; Joan Armstrong, Montreal; J. H. Daymond, L. H. Frost; W. Kryskow, Canadian General Electric; J. P. Dusault, E. Roy Industries, Ltd.; and R. Jobber, T. Eaton Co.

Universal-Cyclops Opens New Stainless Steel Plant



This modern two-high temper mill is part of Universal-Cyclops Corp.'s new stainless strip plant at Coshocton, Ohio. The plant has a capacity of 20,000 tons per year, more than doubling the company's overall strip producing capacity. Over \$8,000,000 has been invested in the plant, and another \$5,000,000 is to be spent by the end of the year.

Union Steel

Honors Dean, Bitney

A combined party was held at Union Steel Co.'s main office in Albion, Mich., to honor both President Clark Dean and Vice President D. H. Bitney upon completion of 35 years of continuous service with the company.

Presstime News

Sargent Expresses Optimism At Home Furnishings Market

Speaking at the International Home Furnishings Market at Chicago's Merchandise Mart, June 16, Richard J. Sargent, vice president, Westinghouse Electric Corp., stated "The consumer is buying again, and the white goods business is running considerably ahead of last year. I find that in checking various geographic sections of the country, general business continues to improve everywhere."

Sargent went on to say that industry sales have far exceeded predictions for 1959 thus far. Industry leaders predicted sales would run 8 to 10 per cent ahead of 1958; for the first five months of '59, distributor sales to dealers on refrigerators, freezers, electric ranges, and home laundry equipment are running 19.5 per cent ahead of the same period one year ago.

According to Sargent, a breakdown of five months' figures shows automatic washers 13 per cent ahead of last year; electric dryers 8 per cent ahead; free-standing ranges 15 per cent; and built-in ranges 47 per cent ahead. "The old 'bread and butter' line, refrigerators, has shown a fine upturn with a gain of 23 per cent for the first five months. Freezers, a bright and shining light last year, are running 35 per cent ahead."

Ryerson Steel To Build New Office Building

Construction of a new general office building in Chicago has been announced by Joseph T. Ryerson & Son, Inc., ware-

Construction Begun on Armco General Offices

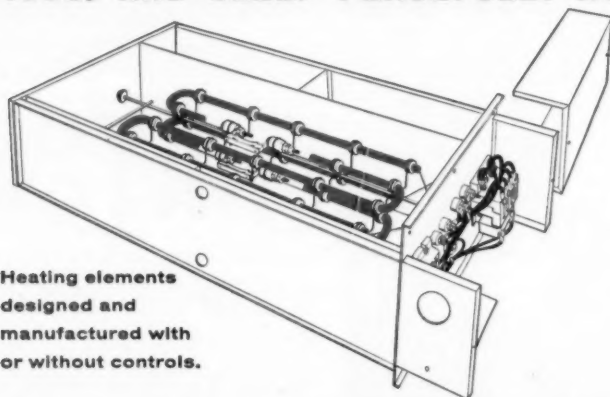


Construction has begun on Armco Drainage & Metal Products Co.'s new campus-style general offices in Middletown, Ohio. M. C. Patton, chairman of the Armco Steel Corp. subsidiary, said that the building at the left, which will house the 130-man staff, will be completed by Dec. 1. The other two buildings will be completed at a later date.

**SUPPLEMENTAL
HEATING
ELEMENTS
GIVING
YOU
NIGHTMARES?**



**ARE THE OGRES OF DESIGN, PRICE, PERFORMANCE
AND DELIVERY CHASING YOU ALL NIGHT LONG?
WHY NOT DO WHAT MOST MANUFACTURERS OF
EQUIPMENT USING SUPPLEMENTAL HEAT ARE
DOING? CALL THE TUTTLES IN TECUMSEH (PHONE
NO. 1008) AND SLEEP PEACEFULLY AGAIN.**



Heating elements
designed and
manufactured with
or without controls.

STOP AND SEE US IN OUR NEW PLANT.

"the house of quality"

H. W. TUTTLE & CO.

TECUMSEH, MICHIGAN

Manufactured and distributed in Canada by CRONAME (Canada) Ltd., Waterloo, Quebec

Industry News

→ from Page 75

housing subsidiary of Inland Steel Co.

Located adjacent to its plant at 16th and Rockwell sts., the Ryerson building will be 210 x 210 feet, two stories high, with steel frame construction and walls made largely of glass and stainless steel.

The structure will be banded with 18-inch wide channel steel at the first and second floor and roof levels. The channel steel will be placed flat side out, and painted. Spandrel panels will be of opaque, vitreous coated, tempered glass, will mullions of stainless steel.

International Lubricant Moves

International Lubricant Corp., a division of Shell Oil Co., has moved its executive offices and laboratory facilities into an \$850,000 two-story building, northwest of the city limits of New Orleans. The company manufactures lubricating greases and motor oils for the metal fabricating and finishing industries.

Chase Brass Relocates Warehouse

Chase Brass & Copper Co. has announced relocation of its New Orleans warehouse to 1000 S. Jefferson Davis Pkwy., New Orleans. According to J. M. Jolley, New Orleans district manager, establishment of this enlarged facility is the result of increased industrial activity in New Orleans and surrounding areas. The warehouse will also house a variety of stainless steel and aluminum bar and sheet.

NARDA Honors Kelvinator

The executive committee of the National Appliance and Radio & Television Dealers Assn. has passed a resolution honoring Kelvinator Div., American Motors Corp., "for an advanced degree of dealer-mindedness and courage in the initiation of the company's new appliance franchise form."

The committee stated that NARDA had long advocated the establishment of manufacturer franchises with a future for the dealer and value for the manufacturer.

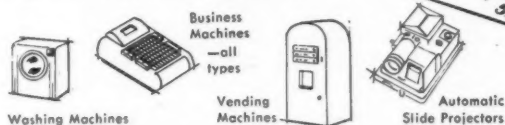
Chemical Institute Elects Young

E. Gordon Young, director of the Atlantic Regional Laboratory, National Research Council, Halifax, N.S., has been elected president of the Chemical Institute of Canada for 1959-60. Elected vice president of the Institute was Wilfred N. Hall, president of Dominion Tar & Chemical Co., Ltd., Montreal, Quebec.

This miniature solenoid . . .



can do a BIG
job for a long,
long time in products like these . . .



DORMEYER Folded Frame Solenoids

Compact • Rugged construction • Simple design • Low unit cost
Double shading coils • High seating pull • No hammer • Less
AC hum • No power drop-off • Uniform characteristics

IMMEDIATE DELIVERY . . . constant or intermittent duty types . . .
pull capacities to 5 lbs. . . strokes to 1/2" . . . single units or big
runs. SPECIALS CUSTOM ENGINEERED—prompt estimates.

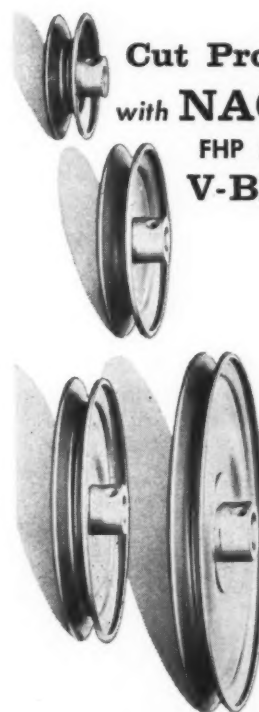
Write Dept. TR for Catalog

DORMEYER INDUSTRIES

3436 Milwaukee Avenue

Chicago 41, Illinois

Cut Production Costs with **NAGEL-CHASE** FHP SINGLE GROOVE V-BELT PULLEYS



- Sturdy welded, pressed steel construction
- Light weight design
- Wide range of sizes
- 2.4" to 12" P.D.
- 1/2" to 1" bore

Nagel-Chase specializes in the economical production of sturdy light weight fractional H.P. V-Belt pulleys for original equipment manufacturers. Because of specialized equipment and tools for a wide range of sizes, manufacturers can cut tooling and production costs on standard sizes of pulleys by using these standard sizes. Available for a wide range of pitch diameters for both "A" and "B" section V-Belts.

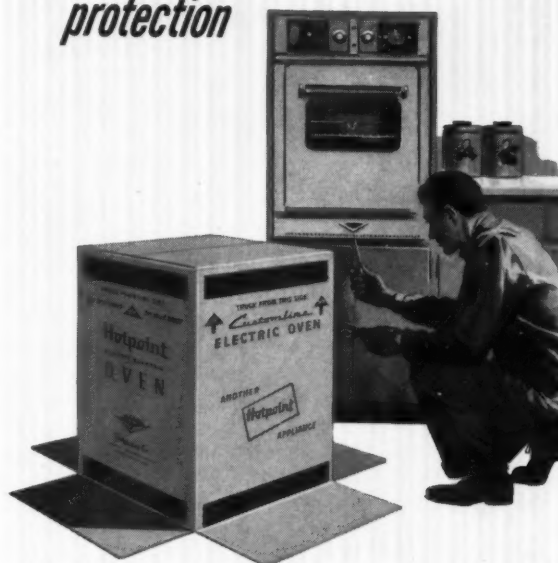
For complete specification
write for catalog circular
today.

The NAGEL-CHASE MANUFACTURING CO.

2817 No. Ashland Ave.

Chicago 13, Ill.

*Corrugated box
with built-in
protection*



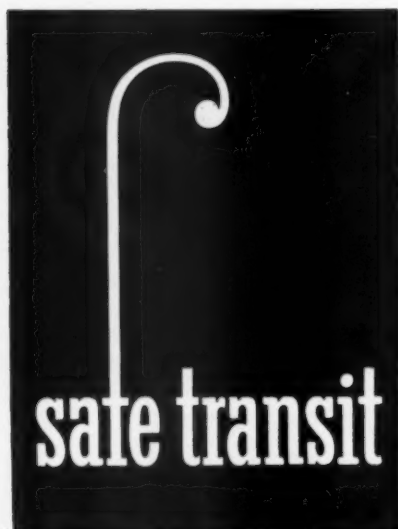
Hotpoint ovens travel to
kitchens in custom-designed
Hinde & Dauch shipping
boxes. Interior packing
prevents damage, keeps
appliances in factory-new
shape. Does your product
need king-size protection?
Better see H & D.



Hinde & Dauch

Division, West Virginia Pulp and Paper

AUTHORITY ON PACKAGING • SANDUSKY, OHIO
15 FACTORIES • 42 SALES OFFICES



COPYRIGHT 1959
DANA CHASE PUBLICATIONS
 York Street at Park Avenue
 Elmhurst, Illinois

editorial voice of the national safe transit program

devoted to improving packaging methods and shipping and materials handling methods for the appliance and metal products manufacturing industries. This section contains plant experience information and industry advances for the use of all executives and plant men interested in improving packaging and shipping methods and in loss prevention. The section contains complete information on the national safe transit pre-shipment testing program for packaged finished products and detailed reports of divisions and sub-committees of the National Safe Transit Committee.

Hydraulic Lift Truck

A hydraulic system lift truck has wear resistant packing and is said to take a minimum number of strokes to achieve a five-inch lift. Lowered height of the forks is $3\frac{1}{4}$ inches and raised height is $8\frac{1}{4}$ inches. The wheels roll on encased ball bearings and pivot 90 degrees in both directions. Units are available in either 2,400 or 4,400 pound capacities, with 36, 42, or 48 inch fork widths. For further information, contact Dept. MPM, Industrial Handling Equipment Co., Inc., 1225 W. Monroe St., Chicago 7, Ill.

Yale Appoints Latin America Representative

Donald L. Frazer has been appointed Yale Materials Handling Div., Yale Mfg. Co., factory representative for all of Latin America, according to an announcement by S. Wilson Clark, manager of export sales. Frazer has served for six years as Yale's Uruguayan representative handling the industrial truck line.

Pneumatic Vibrator

Cleveland Vibrator Co., Cleveland, Ohio, has announced a massive pneumatic vibrator which delivers 16,000 pounds of impact. Its principal uses are on vibrating tables, hoppers, large bins, railroad car shake-outs, and special packaging platforms. This 539-pound model operates on 60-80 pounds of air pressure and its 176-pound piston has a $1\frac{1}{4}$ inch stroke.

The vibrator speed and intensity can be varied according to needs, and the unit can be rigged to operate continuously or intermittently.

Carriage Extension Permits Narrow Aisle Loading

A new fork truck carriage extension, for use with narrow aisle trucks, has been designed by engineers of the Raymond Corp. The accessory is for use with the company's "four-directional" truck, and is said to simplify the handling of such long, springy items as strip stock, small diameter tube stock, and light bar stock.

Use of the carriage extension allows



the truck to handle loads 15 feet or longer. In operation, the truck moves down a wide main aisle, and when it reaches the narrow storage area, moves sideways into an aisle as narrow as seven feet.

Idea Booklet For Shippers

A helpful reference for shippers is available in the form of a 48-page booklet containing ideas for improving packaging and shipping methods in all industries. The 19th edition of this booklet also contains descriptions of a complete line of strapping, tools, and equipment. To obtain a free copy of the booklet, write Dept. MPM, Signode Steel Strapping Co., 2600 N. Western Ave., Chicago 47, Illinois.

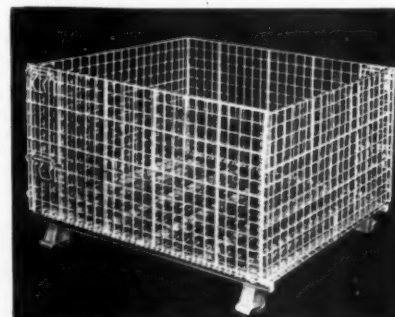
File Folder Offered On Steel Drums, Pails

A convenient file folder is now available which gives full specifications, with drawings, on universal standard, five-gallon steel pails, and 55-gallon steel drums, for both open and tight heads. In addition, the publisher provides information on a new process for cleaning and phosphatizing drums to inhibit rust and corrosion, and for better paint lining and adhesion. To obtain the file folder, write Dept. MPM, Bennett Industries, Inc., Peotone, Ill.

Low-Cost Container

A low-cost, "convenience model" container has been announced by Union Steel Products Co. of Albion, Mich. Called the "Scotsman," its low price is said to result from mass, single-size production and elimination of various optional features.

The model offers 4,000 pound capacity, safe stacking type legs, and a fold-down feature which, it is estimated, saves 75 per cent of return shipping or storage space. The container is 40 x 48 x 24 inches in size and has an eight-way, lift-truck entry.





SOME DO... SOME DON'T

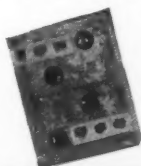
SOME STACK HIGH ... SOME DON'T ... SOME DON'T HAVE TO

For every product there is a *right* container for the optimum protection of your product from production line to destination, both in storage and in transit.

Only a supplier, offering a large variety of shipping containers and materials can provide you with an impartial recommendation of the best container for your *particular* products and shipping needs.

LARGE OR SMALL — CHICAGO MILL MAKES 'EM ALL! A COMPLETE LINE OF CONTAINERS FOR EVERY SHIPPING PURPOSE!

FREE! Illustrated Catalog describing Chicago Mill's Shipping Containers and Services!



PALLET BOXES—
Wire Bound



PALLET BOXES—
Hinged Corner



Cleated Boxes



E-Z Pak Cleated Corrugated
(Watkins type)



Wirebound Crates



Wirebound Boxes



Corrugated



Hinged Corner Crates or Boxes

CHICAGO MILL AND LUMBER COMPANY

33 South Clark Street

Chicago 3, Illinois

PLANTS

- CHICAGO, ILLINOIS
- GREENVILLE, MISSISSIPPI
- HELENA, ARKANSAS
- ROCKMART, GEORGIA
- TALLULAH, LOUISIANA

Reduced intransit damage with reduced packaged product cost

A STATEMENT FOR MPM *by Paul W. Bush* • WESTINGHOUSE ELECTRIC CO.
MANSFIELD, OHIO

Eleven years of industry-proved usage has won broad acceptance for the National Safe Transit Committee's pre-shipment test procedures as an intransit damage deterrent.

When Federal Specification PPP-P-600, entitled "Porcelain Enamel Products and Major Household Appliance-Test Requirements for Packing Of," was published in May, 1958, another important step in NSTC progress was taken, since the NSTC test procedures served as the basis for this new government specification.

Rear Admiral James W. Boundy, USN, who worked with the Porcelain Enamel Institute, the National Safe Transit Committee, and appliance manufacturers in preparing the specifications, commented that, "Shorter lead time in the procurement and delivery of porcelain enamel products and major household appliances is a definite possibility."

The Admiral, who is chief of the Navy's Bureau of Supplies and Accounts, contended that, "It has always been our policy to recognize industrial practices and to use them where they can be defined for purposes of competitive bidding, and where they can be adapted to anticipated shipping and handling conditions. The existence of the NSTC test procedures provided us with an excellent opportunity to carry out the policy."

"In effect, we have adopted these procedures for most of our situations and have pushed them one step further for others by establishing minimum criteria to prevent damage where shipping and handling conditions are not what they should be. We are gratified to see that the appliance industry is already embarked on a program to establish minimum export standards, and when completed, we will be happy to consider substituting these standards for those in the government specification."

THEY SAID IT COULDN'T BE DONE—reduced intransit damage along with cost reduction in the overall packaged product. This is an enviable goal which all manufacturers continually seek. The ever mounting costs of raw material, labor, and services make it increasingly difficult to keep costs competitive; so, intransit damage becomes a most important part in any manufacturer's cost structure, even to customer relations.

It has long been recognized that by adding cost, intransit damage could be reduced. However, this added cost becomes a stumbling block, so other means must be sought and at the same time result in reduced intransit damage. As in all segments of industry, positive

methods of testing to establish standards is a key to this common problem.

To continually keep abreast of the competitive market, it is necessary to provide sound engineering design and maintain high quality. Today our products literally sell themselves to our customers, both in appearance and performance. To do so, they must arrive at the customer in the same gleaming appearance and operating performance as when they left the manufacturer.

All of these facts are taken into consideration in the early concept of design of any particular appliance manufactured by Westinghouse. At this stage, the standardized National Safe Transit Committee tests play a most important part. These tests have been correlated

Laundromat and dryer on the Vibration test, which is first part of NSTC tests.

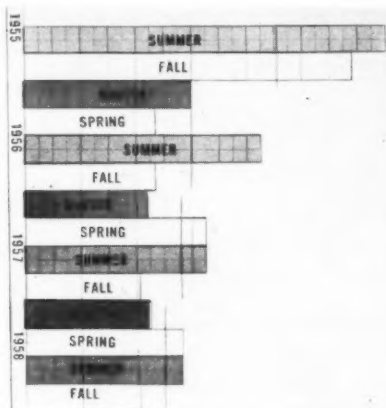


with actual intransit conditions and have been accepted by industry as a standard for determining the shipability of the overall packaged product.

Testing engineering samples

The initial engineering samples are subjected to the NSTC tests. This provides the design engineer of the product and the packaging engineer with the necessary data for the proper physical strength of the product and the overall packaging requirements.

Still another important step follows. NSTC tests are a part of the product verification at the time the product first goes into production on the assembly line. The first preliminary samples are packed with the ultimate design container and packing, and are subjected to the NSTC tests to determine, prior to the start of production, that they will withstand normal intransit shocks. This determines that these particular products



Calculations show reduced intransit damage of some 45 per cent during 1955-58.

will arrive at their destination in a satisfactory condition under normal intransit handling. The standardized NSTC tests make this possible because they are realistically based on correlation for the past several years.

This is extremely important when any major design change is made. New models are being built preparatory to supplying all the distributors and dealers with initial samples. This requires a large quantity of finished products to be built prior to their release and announcement. As an example, the 1959 Laundromats presented a problem in packaging which was considerably different than the models for 1958. The intransit damage on previous model Laundromats has been reduced over the past several years to an all-time low. It would be catastrophic to bring out a new model only to find that it arrived at



Packaged roaster, ready for shipment, being subjected to the Drop Shock test.

its destination damaged and unsalable because of this intransit damage. These new models were repeatedly subjected to NSTC tests and the ultimate design in overall packaging result in shipping braces of a lesser cost and even offered more ease of removal for the serviceman at the time of installation. This overall design of the Laundromat, together with the shipping braces arrangement, and the packing and container, successfully passed the NSTC tests.

Damage records tell the story — daily tests pay off

In comparing the intransit damage for the 4th quarter of 1957 to the 4th quarter of 1958, we are in position to compare the two models in this relationship. Examination of this report shows that we are maintaining our low intransit damage even with the simplified design of shipping braces. This could only be done by pretesting to determine shipability of the product.

This is but one of many examples in our files. We are continually improving quality, reducing cost, and at the same time maintaining low intransit damage of our products as they reach our customers. Our National Safe Transit tests are conducted on a daily basis. Thus, we have a continual check of our daily production which will immediately reveal unforeseen changes in workmanship or material which might prove detrimental.

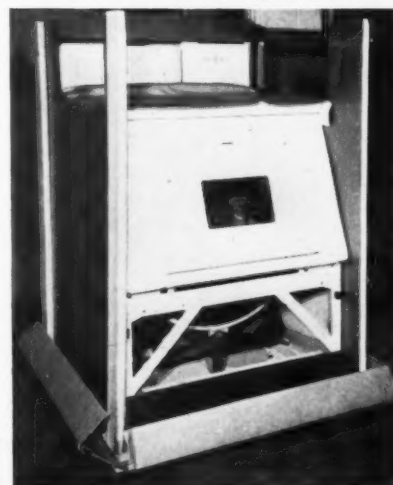
The same procedure is followed on all of our major appliances and has enabled us to have a direct measure of the

shipability of our packaged products. The success is evidenced by the trend of our intransit damage. The four years, 1955-1958 inclusive, are plotted on a quarterly basis. Simple calculations show that we have reduced our intransit damage some 45 per cent from 1955 to 1958 inclusive and, at the same time, reduced our packaging costs. Our records over the past decade show a continuous downward trend in intransit damage.

A most important factor is the continual NSTC testing program in conjunction with the various cost reduction programs initiated by the engineering or manufacturing departments.

This NSTC testing program is like-
to Page 82 →

Despite simplified design of shipping braces, low intransit damage is achieved.



ADVERTISERS' INDEX

Page	Page
ALLEGHENY LUDLUM STEEL CO.....34	LOWE BROS. CO., THE.....20
AMERICAN CLEANING EQUIPMENT CORP.18	MACCO PRODUCTS CO.40
ARMCO STEEL CORP.1	MARSCO MFG. CO.4
BROWN, LIPE & CHAPIN DIV., GENERAL MOTORS CORP.5	MEAKER CO., THE32
CHICAGO MILL & LUMBER CO.79	MECHANICAL PRODUCTS, INC.....65
CHICAGO VITREOUS CORP.....6 & 7	MILLS PRODUCTS, INC.....70 & 71
CONTROLS CO. OF AMERICA.....2	MUNDT & SONS, CHARLES.....13
DETROIT CONTROLS DIV., AMERICAN STANDARD..2nd COVER	NAGEL-CHASE MFG. CO., THE.....77
DETROIT STAMPING CO.21	NORTHWEST CHEMICAL CO.15
DMCP ASSOCIATES64	NORWALK POWDERED METALS18
DOLE VALVE CO.4th COVER	OAKITE PRODUCTS, INC.46
DORMEYER INDUSTRIES77	PEMCO CORP.17
FAHRALLOY CO., THE14	PRESSTITE DIV., AMERICAN-MARIETTA CO.19
FERRO CORP.....42 & 43	PYRAMID MOULDINGS, INC.8
GENERAL INDUSTRIES CO., THE...73	QUAKER STATE METALS CO.....12
HINDE & DAUCH DIV., WEST VIRGINIA PULP & PAPER CO. 77	RANSBURG ELECTRO-COATING CORP.68
HOMMEL CO., THE O.69	REPUBLIC STEEL CORP.36 & 37
HUYCK CONSTRUCTION CO.64	TURCO PRODUCTS, INC.11
INGRAM-RICHARDSON, INC.72	TUTTLE & CO., H. W.76
INLAND STEEL CO.55, 56 & 57	UNION STEEL PRODUCTS CO.3rd COVER
INTERCHEMICAL CORP.59	UNIVERSAL SCREW CO.10
JONES & LAUGHLIN STEEL CORP., STAINLESS & STRIP DIV.....52	WASHINGTON STEEL CORP.....63
LEPEL HIGH FREQUENCY LABORA- TORIES, INC.61	WEIRTON STEEL CO.74
	YOUNGSTOWN SHEET & TUBE CO. 25

CUSTOMER SERVICE OFFICES

DANA CHASE, JR., York St. at Park Ave., Elmhurst, Ill.....	TErrace 4-5280
R. F. KENDIG, York St. at Park Ave., Elmhurst, Ill.....	TErrace 4-5280
KARL J. SHULL, 608 Midvale, Los Angeles 24, Calif.....	GRanite 7-8824 and WEbster 1-3030
FRED JAMESON, 821 Edinburgh St., San Mateo, Calif.....	DIamond 3-8806

CLASSIFIED

SILK SCREEN-PAINT TECHNICIAN

Opportunity for young man to affiliate with a progressive company. Candidate must be capable of setting up and developing silk screen and spray painting operations. Age: 30-40. Location: Central Michigan.

Write Box 6-B, Dana Chase Publications, York St. at Park Ave., Elmhurst, Ill.

PORCELAIN ENAMEL

Man with experience in research and development. Please give details and salary desired. Box 6A, Dana Chase Publications, York St. at Park Ave., Elmhurst, Ill.

FINISHING CONSULTING SERVICE

A complete service is offered on such problems as: equipment design, hanger design, finish department design and layout, methods of finishing, actual testing of parts, etc.

The service is headed by Paul R. Dukes, a registered engineer with 24 years of experience in all types of production finishing. He is also president of Industrial Finishers, Inc.

If you have a finishing problem write:

Paul R. Dukes, Finishing Consulting Service, 2285 Albion St., Toledo 6, Ohio. Phone CH-83391.

Reduced damage

→ from Page 81

wise effective with our portable appliances. The testing program constitutes the Vibration test, followed by the Drop Shock test.

Distributor cooperation pays off

We organized the Westinghouse Safe Transit Committee several years ago as an educational program with our distributors, which ties in with the NSTC Program in a most remarkable manner. The distributors submit a monthly report of all their intransit damage. In turn, these figures are reported back so that they know the overall intransit damage on a national basis to compare with their own. This has been found to be extremely valuable in correcting local conditions, which may result in an unusual damage. Through this, our distributors keep pace with the NSTC Program being carried on in each manufacturing division.

The program greatly assists the distributors in their work with the carriers in reducing damage, since they are familiar with the NSTC program being carried on in manufacturing divisions.



YOUR NEW APPLIANCE DESIGNER?

And that she is! Aside from her ubiquitous role as mother, homemaker, club woman, shopper and ultimate consumer of your best products—she *is* your new appliance designer.

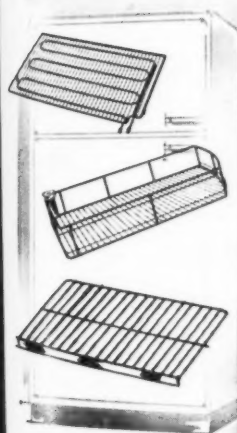
She knows exactly what she wants. High styling and functional beauty are important to her home decor. But even more, she wants *and expects* year upon year of convenience... plus dependable, maintenance-free service from each useable, functional part of any appliance.

Therefore—when your new appliance requires the finest in modern welded wire components, save valuable time by calling upon Union Steel. Take advantage of their experienced leadership in the design, fabrication, in-plant finishing and pre-planned delivery of beautifully styled, dependable welded wire components.



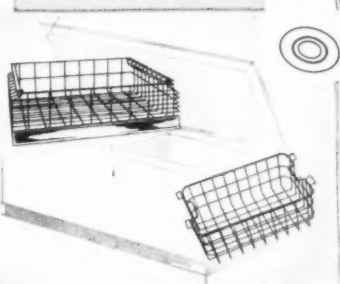
USP Service is as close as your phone. Union Steel's engineers will gladly assist you. A phone call to NA tional 9-2181 (Albion, Michigan) will be your best investment of the year.

Special Components... Rotisserie Units, Oven Heating Element Frames, Trivets, etc.

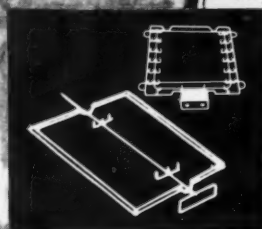


Refrigerators and Upright Freezers... evaporators, Condensers, Baskets, Heating Trays and Racks

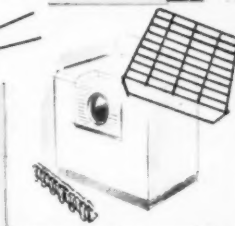
Wire Forms of All Types



Freezers... Baskets of All Types, Dividers, Special Sections



Room Coolers, Ventilating Fans, Dehumidifiers... Grilles, Vents, Guards and Special Sections



Washers and Dryers... Dishwasher Baskets, Sections, Glass Racks, Frames



Ranges and Built-In Oven Heating Elements, Racks, Side Frames

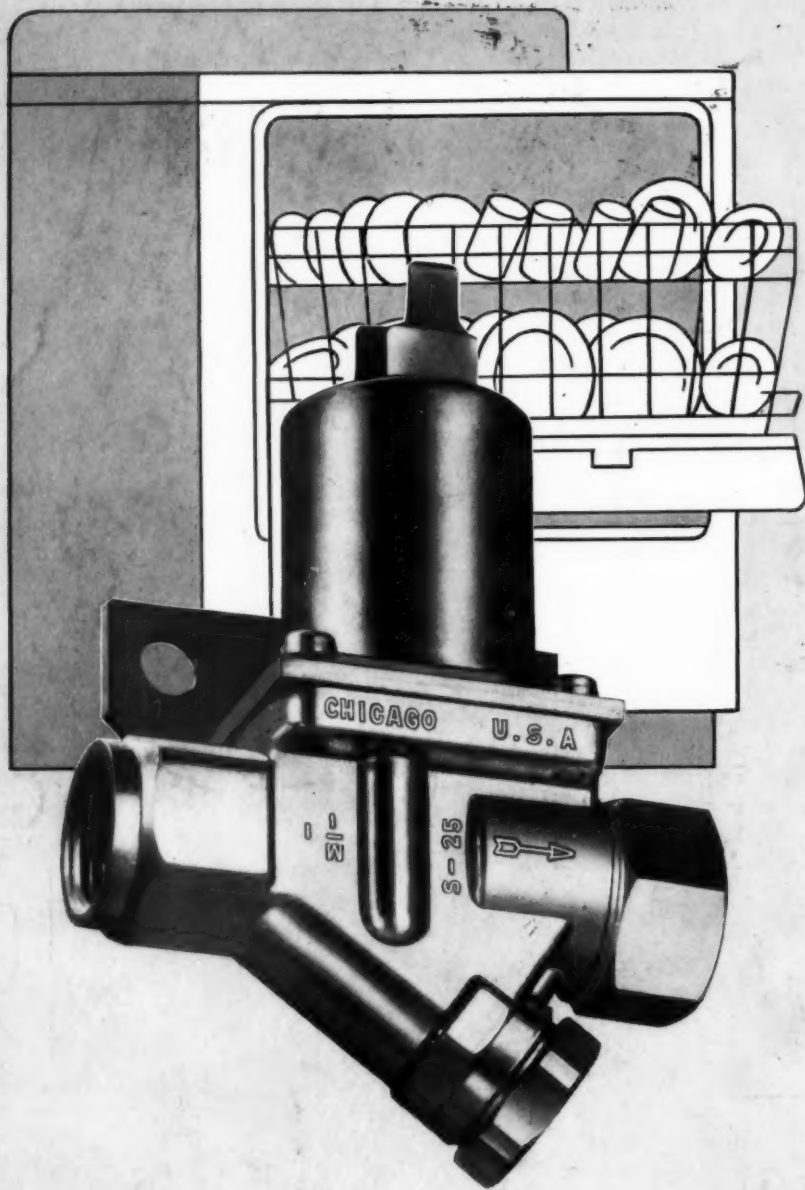


UNION STEEL PRODUCTS CO.

Contract Wire Products Division ALBION, MICHIGAN

Incoming dirt **CAN'T CLOG** this new

DOLE DISHWASHER VALVE



DESIGN DATA

The improved Dole (S-25 Series) Single Solenoid Shut-off Valve was designed for applications requiring moderate flow rates (up to 5 GPM) and dependable remote, electrical operation. Contains patented flow control, special Monel inlet screen and slow-closing diaphragm that eliminates water hammer. Pressure capacity—200 psi. In addition to dishwashers, engineered for use in ice cube machines, water softener equipment, drinking fountains and dispensers.

*Solves troublesome
service
problem—keeps
customers satisfied*

Now . . . for the first time . . . a dishwasher shut-off valve that is not affected by the tiny particles of dirt found in most incoming water supplies.

The new Dole Single Solenoid Valve incorporates an entirely new principle. A unique diaphragm and rubber poppet arrangement momentarily hold dirt in suspension . . . digest it . . . pass it through without clogging or damaging the automatic control.

Other valve designs permit trapping and holding of dirt resulting in jamming and refusal to close properly . . . eventual valve failure . . . costly part replacement.

This new Dole S-25 Single Solenoid Shut-off Valve insures continuous trouble-free operation . . . does away with costly service problems . . . and most important . . . keeps customers satisfied.

Dole pioneered the use of solenoid valves for turning water on and off, and regulating flow in automatic dishwashers. This newest design is a good example of Dole's continuous program of product improvement and development . . . finding better solutions to problems of fluid control.

If your products or projects involve questions of flow rate, mixing, temperature control, shut-off, dispensing . . . Dole Valves may be your answer.

Control with

DOLE

Additional information about this or other Dole Solenoid Operated Valves may be obtained by writing

THE DOLE VALVE COMPANY
6201 Oakton Street • Morton Grove, Illinois
(Chicago 5, 1964)

NY
(lincoln
rh)